5

"Our biggest problem... does the patient <u>really</u> understand?"

The Comprehension Process

It is not surprising that, "Do you understand?" is one of the most common questions in patient-care settings. It is essential that patients understand how to carry out their regimen. This chapter describes the conditions necessary for remembering and learning.

Comprehension is a complex process that depends on the effective interaction of logic, language, and experience as well as other factors. Comprehension results in grasping the meaning of the instruction.

To make this chapter more meaningful, we suggest you select a sample of one of your own teaching materials—perhaps a pamphlet or page that patients seem to have difficulty learning. Keep this at hand as you read this chapter, and as you progress we'll ask you to consider how this material could be made easier to learn.

The Memory System

Simply described, our memory may be seen as having three main processing systems: sensory information processing, short-term memory, and long-term memory. As with computers, our mental systems deal with information collection, storage, and retrieval. And like computers, each memory component has a capacity limit, a storage time limit, and specific procedures if storage and retrieval are to take place. It is most helpful to know these limits if our teaching is to result in patient learning.

Getting your message into the patient's memory systems

Gaining Attention: The starting point in comprehension is gaining the patient's attention. Why is this so important? Gaining attention "turns on" the electrical connections and initiates the necessary chemical changes that transport messages within the brain. You can do this by vividly telling patients the benefits they can receive by listening to what you have to say, by reading the pamphlet, or listening to a tape, or viewing a video. This helps gain their attention. The patient has to activate his own memory system by paying attention.

The initial processing: How can you help at this stage? Since the communications signal comes from the five senses, involve as many of these senses as possible so that the message is reinforced. Show a picture, read a piece of text, demonstrate so that if the message doesn't come through one way, it will have a second chance by another route.

The real difficulty at this stage of the memory system is that further information processing is not automatic. It only occurs when the mind pays attention to the signal and gives it a priority. Do I like it? Do I want it? Do I need to pay attention to this?

Assuming you've captured the patient's attention, how do you get your message into her short-term memory?

Getting through the short-term memory

Short-term memory has two characteristics that affect all of us:

1. It has a very *limited capacity.*
2. It has a *short storage time.*

In well-educated and well-trained adults, short-term memory can rarely store more than seven independent items at one time.[1] Our minds have much in common with a computer shift register that has just seven slots for short-term data storage. If more than seven independent items vie for our memory—such as steps in a medical procedure, or items on a diet list—the arrival of the eighth piece of information causes the human shift register to say, "Dump!" Then all seven slots may be wiped out in preparation to receive the next items of information.

The message for us all is that if we present lists with more than seven items, people not only don't remember the items beyond number seven, but they lose all or most of the first seven as well! Perhaps you've heard a colleague say,

"Well, they may not learn all these (15 items), but I'll include them all. They should get some of it."

Not true! *The more you include, the less they remember.* For people who have had less education and training, they may remember less than seven items; perhaps five or fewer may be their current working limit. At this point we ask you to review the material you selected at the start of this chapter. Does it present more than seven independent items for patients? If it does, it won't get through their short-term memories, and will not be remembered.

Perhaps you've experienced this limitation at a meeting or party when you were introduced to many new people. You meet one person after another; you smile and exchange names. When you have met them all you are dismayed that you remember few if any of the names! The information is forgotten because of a memory overload. If you doubt this memory limitation, read the easy words listed below, then close the book and attempt to write them down. Then reopen the book and see how many you could recall correctly.

this	getting	can
five	of	vegetables
risk	fruits	your
and	cancer	eat
day	a	cut

A more appropriate way to teach these 15 words without overtaxing our limited memory is by "chunking" the 15 items so they will fit within the limits of short-term memory. Chunking is a process of regrouping like information into several, smaller groups. Each of the smaller groups is "chunked" under its own descriptive subheader. For example, the 15 words could be chunked into two short sentences—just two "items" for our seven-item short-term memory capacity to cope with. "Eat five fruits and vegetables a day. This can cut your risk of getting cancer."

Let us consider another chunking example. The nine items (Figure 5-1) are from a patient instruction on diabetes. If we attempt to commit them to memory in the original form, we face a tedious task of rote memorizing. However, if the nine items are chunked under three descriptive headings (Figure 5-2), they can be remembered more easily. Furthermore, the two important behavior items from the patient's point of view (what to do on sick days) now stand out from the other items and are more likely to be noticed and remembered.

- What ketones are
- Why ketones are produced
- What happens when ketones are produced
- Why test for ketones
- When to test for ketones
- How to test for ketones
- What ketone tests are available
- When to call the doctor
- What to do during sick days

FIGURE 5-1

Nine-item list from a diabetes instruction

KETONES: WHAT ARE THEY?
- What ketone are
- Why ketone are produced
- What happens when ketone are produced

TESTING FOR KETONES
- Why test for ketones
- When to test for ketones
- How to test for ketones
- What ketone tests are available

WHAT TO DO DURING SICK DAYS
- When to call the doctor
- What to do during sick days

FIGURE 5-2

Nine-item list "chunked" under three subheadings

Short-term memory has a short retention time. This memory usually lasts from a few hundred milliseconds to less than a minute. In very unusual instances with some people, the memory may last up to about an hour if it is not "overwritten" by some other stimulus or additional information. For most practical purposes, it lasts less than a minute. The information must be moved into the long-term memory quickly if patients are to remember new information. Quick conversion into long-term memory is necessary even for health instructions in the more "permanent" media, such as written instructions.

Patients with low literacy skills read written health care materials word by word. The one-word-at-a-time reading method slows down the reading process. By the time they arrive at the end of a long sentence, they may have forgotten many of the preceding words. Thus, they may have read every word without knowing the meaning of the sentence.

For written instructions, one remedy for the word-at-a-time reading process is to write shorter sentences using more common words. Another way to speed up the mental processing of words is to use words consistently throughout your instruction. Stay with one well-understood term such as "your meals" rather than using a variety of words, such as "diet," "meal plan," "diet prescription." It takes too long to decode all the various terms, compare them, and reclassify them. Such a variety of words are likely to be lost or misunderstood. (More than one patient has understood "diet prescription" to be an add-on—like a drugstore prescription—and has eaten her diet prescription in addition to her regular meals.)

For a video instruction, a remedy is to provide time for the viewer to convert the new information to long-term memory before the time is up on the short-term memory. (Approaches to doing this for written materials are covered in Chapter 6, and for video in Chapter 8.)

Please return to the sample instruction you selected at the beginning of the chapter. Look for sentences longer than 15 words, especially those that contain one or more difficult words. If you found several, it is likely that, for low literacy patients, comprehension will suffer because the sentences take too long to read.

Getting into the long-term memory

The long-term memory lasts for days and years and has no practical limit in terms of capacity. The two key factors to get information "learned" by the long-term memory are **association** and **interaction.**

Associate the new information with what the patient already knows. We learn new information by tieing it to something we already know—a thing we know, an experience we've had, something we've felt, something we've seen, something we have smelled or tasted. Here are some ways to do this:

- Explain the new words by context and examples.
- Ask the patients to say what it reminds them of.
- Use several media: pictures, tactile actions, and demonstrations.
- Use a mnemonic—like the "A,B,C" to remember the three steps in CPR.
- Relate it to something comparable they can do at home.

To explain the amount of salt to add to infant oral rehydration solution for use in third world countries, an instruction tells the amount of salt and then says,"Be sure it is no saltier than tears."

Compared with words, pictures and illustrations help learning and recall because there are many more access points in the brain to use for their recall.[2] Indeed, a picture may be worth 1,000 words. How often have we recognized someone's face, but cannot recall the name; or we can just "see" a book, its size, color, and location on the shelf, but cannot recall the title or author?

Involve the patient via interaction. Educators have long known that students learn more rapidly when they interact with new information to be learned. This has been confirmed with physical evidence from recent neurophysical research, which shows that when a person interacts with new information, a chemical change takes place in the brain that fosters long-term memory of that information.[3] When we do not interact, the chemical change does not take place, or does so more weakly.

Here are some ways to build patient interaction into instructions:

- Ask the patient to tell you about the new information in his own words.
- Present a problem: "How/when will you do this when you go home?"
- Ask the patient what problems he has or expects to have to comply.
- Ask questions during a teaching/learning session; dialogue with the patient.
- For written materials, ask questions and leave blanks for patient write-in, or check-off, or ask the patient to circle a selected picture.
- For small group instruction, foster interaction between members of the group.

Rather than ask patients if they understand your instruction, ask them to tell you—in their own words—about the instruction. Ask them to tell you how they will carry out the instruction, and the kinds of problems they face to comply. *In their own words* is important because the test of comprehension is the conversion of information from one format to another. Examples of this conversion, in addition to converting your words into their words, are showing or demonstrating the action called for in the instruction.

Interaction can be built into instructions in any media. If it is written, include a question to be answered after every important topic. The reader must write something, or circle or check something, to respond. For audiotapes, include a few direct questions to the listener and include a pause to allow the patient to respond; then, after a pause, give the right answer. A single-page worksheet can be developed for use in patient interaction for audio- or videotaped instructions. If it is a demonstration, have the patient demonstrate back to you. Other interaction methods include the use of games, interactive television, and interactive multimedia instructions. These interactive methods are described in more detail in the following chapters.

At this point, close your eyes and say out loud the ways you can build interaction into your patient instructions.

To summarize, to get information into the patient's memory:

SHORT-TERM MEMORY

- *Gain the patient's attention.*
- *Present no more than seven items at a time.*
- *Get to the point without delay.*

LONG-TERM MEMORY

- *Associate new information with what the patient already knows.*
- *Involve the patient in interaction with the information.*
- *Repeat or review.*

Returning now to your pamphlet, is the new information presented in association with something the patient already knows? Are there opportunities for patient interaction? If you can say even a limited "yes" to both of these questions, the pamphlet goes a long way toward being an effective instruction.

The Role of Logic, Language, and Experience

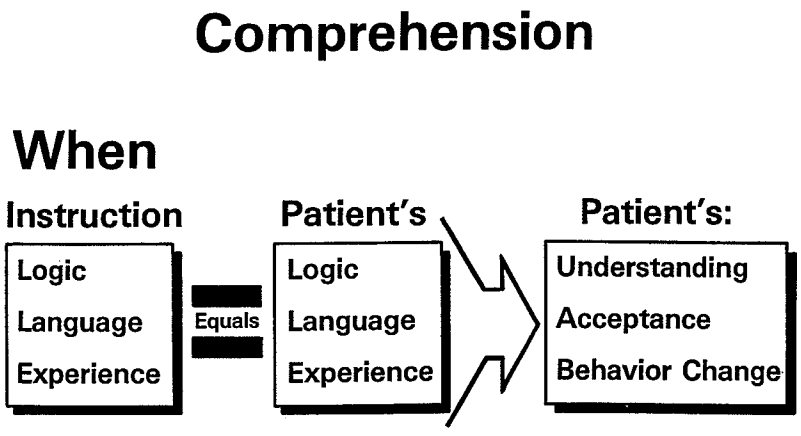
We learn new information by adding it to what we already know in terms of our logic, our language, and our experience. Unless the logic, language, and experience inherent in the new information is a reasonable match with our logic, language, and experience, we are not inclined to accept it or learn it.[4] For example, for many people it is not logical to keep on taking medication when they feel well. Using this logic, it is entirely reasonable to stop taking medication for hypertension or tuberculosis when they begin to feel okay.

Language mismatches occur where unexplained and unfamiliar words are used in a health care instruction. Mismatches also occur where familiar words are used in unfamiliar contexts, for example, referring to blood glucose levels in the "normal range." Patients may think "that's not for me" and discard the advice given.

The concept of matching the logic, language, and experience of health instructions with the logic, language, and experience of the patients is shown graphically in Figure 5-3. If one of your patient instructions is not getting through to your patients, look for possible mismatches in logic, language, or experience.

FIGURE 5-3

Matching the instruction to the patient's logic, language, experience



The Effect of Cultural Differences on Logic, Language, and Experience

Language

Language is the most "visible" of the cultural differences and is also one of the more easily managed factors. Under most circumstances oral and written instructions can be translated from English to any language. Multi-language books are available to aid in obtaining a medical history, and in many hospitals and clinics staff are available to translate for patients.[5]

Translation tips

What about translating pamphlets and handouts into other languages? The tendency is to translate the pamphlet directly from English into another language, and give it to the person to read. This is seldom a productive approach because of cultural differences and literacy limitations. The cultural "baggage" of the English version may be unsuitable for another culture, and many patients don't read well in any language. Before you take that step, ask an interpreter to talk with a sample of the intended population to determine if the instruction needs to be in that language or whether a simplified version in English, which includes lots of illustrations, could meet their needs just as well.

If you decide to translate material, have several (at least three) members from the culture work with you in the overall design and approach. Often graphics, diet lists, and procedures do not translate with the same meaning in other languages. Once the material is translated, have another person back-translate it into English to make sure that omissions or additions have not been made.

- Use a family member who speaks English as a translator, providing the person has sufficient fluency in English to communicate your messages.
- A number of community services are becoming available to meet specific translation needs. For example, some churches offer translation services; major metropolitan airport authorities and community refugee centers have translation help.

There are other ways to communicate when you don't speak the language:

- Use pictures, synthetic body models, and demonstrations with actual equipment to get your message across.
- Try simulation experiences—for example, using play equipment such as "Play Dentist"—to teach patients what to expect before having the procedure.
- Audiotapes made in the dialects of your patient population can be useful in presenting routine information, i.e., admission procedures, orientation to the facility, etc.
- Stories on audio cassettes appropriate to the culture can make both children and adults feel more at home.
- Drawing pictures has a high value in some cultures. Ask the patient to draw how he feels or what he understands about a health instruction.

Testing for comprehension using oral translation: After giving an instruction, ask the patient to show, draw, or communicate with gestures what he is supposed to do. Ask the patient to repeat the feedback if there is hesitation or his body language indicates uncertainty.

Experience

It is difficult for us to know and understand the experience factor of patients from other cultures. All of us interpret information through the filter of our experiences. And some of the most ordinary requests that we make in the health care system are not within the experiences of other cultures. For example:

Upon a return visit to a clinic a non-English-speaking patient had not made the progress expected. When asked if he needed a refill of his prescription, it turned out he had never had it filled in the first place. The prescription slip was still in the glove compartment of his car. He didn't know what to do with it.

In many cultures, tradition dictates how new information should be presented. Therefore, the organization as well as the sequence of information can change with the culture. These cultural variations may include giving a little information at a time; using stories to instruct; building on extended family networks; learning by rote (memorizing). These cultural variations are an additional factor to be considered for low literacy patients. A departure from their cultural tradition makes it harder for them to learn from it. In other words, it takes a different kind of presentation than a literal translation from English to their language. The following two examples illustrate this point.

When computers from the United States were introduced into Japan, the instructions were literally translated from English to Japanese. The literal translation didn't work. The Japanese prefer to be drawn into the material more gradually than American readers. American readers are accustomed to a brief introduction, followed by an overview of the product, and its functions, and then a step-by-step tutorial.

Japanese readers were uncomfortable seeing the big picture first; they prefer to be introduced to the parts one at a time before encountering the whole. But they want some precautions up front about the problems that might arise.[6]

This second example illustrates how the experience and customs of another culture led to a change in the focus of a health care instruction:

The Los Angeles Cancer Education Project conducted learner verification of a number of national and local publications with a group of potential users from the Hispanic community. The group found the materials unsuitable because they dealt with facts, rather than with people and their concerns. They felt keenly enough to create a new publication based on extended family experiences with cancer. Hablaremos Sobre Cancer Dentro de la Familia *(Let's Talk About Cancer Among the Family) became the centerpiece for a comprehensive community effort to detect early cancer. Family participation for cancer detection is more culturally appropriate than individual participation.*[7]

How do you learn about the experience factor? The best way is to work with a sample of your intended audience who are bilingual. Explain your purpose and what needs to be communicated. Ask for their advice on the best ways to present the information. And if possible, have them write it in the native language directly.

If you have no direct access to the population, network with several people in the community who have current access to your intended audience.[8] Ministers, priests, other religious leaders, school systems, community service agencies, and sometimes police agencies can be of assistance. In some communities minorities have formed their own business associations and they can be of considerable help.

Logic

The third component of comprehension in a cultural context is logic: what makes sense to you and me and what makes sense to people with other values and beliefs. In our culture it makes sense to educate the patient directly. Our assumption is that each person manages his own health care. But in other cultures the critical decision making is influenced by others, i.e., the godmother, the priest, the minister, or by an outside group such as a council of elders. In those instances, the target audience broadens to include not only the patient but also the significant decision makers.

For example, one of the authors was teaching breast self-examination in another culture. The women listened politely. They wondered about the wisdom of doing it, however, because if they found a lump, it would be a council of elders who would decide whether anything should be done about it.

In many other cultures it is logical for the authority figure to give "orders." Nobody asks questions. In fact, to ask questions because you didn't understand can be perceived as being critical of the authority figure. What does all this mean for patient education? Patients may need encouragement to ask questions. Pamphlets that model questions can be a great help to legitimatize and sanction asking them.

Patients need to be taught to expect medical personnel to ask questions, i.e., for a medical history. The perception "if he has to ask so many questions he can't be a very good doctor" needs to be reoriented. Patients must learn what to expect in a medical encounter. This is a key area for health education.

It is a common practice in the American culture to lighten up serious information with humor, using cartoons or caricature techniques. This practice can lead to misunderstandings. In many cultures humor is not used when dealing with serious health problems. The perception of non-English speakers may be that the information is not serious or "you don't care about me." Test any material of this type with the intended audience before using it.

Cultural Suitability: What Is Being Done

Health practitioners frequently ask, "How can we know what is appropriate and understandable for another culture?" This poses a challenge for health education programs in terms of both language and culture. One approach is to

produce patient education instructions in all of the frequently used languages in the area. For example, the Department of Health in Hawaii now produces hepatitis pamphlets in Vietnamese, Laotian, and Cambodian languages; the Women, Infant Children's program (WIC) in Massachusetts translates infant feeding information into eight languages; bilingual pamphlets in Spanish/English are as common in Philadelphia as they are in Florida and California; a video on AIDS in Creole with English subtitles is used in the migrant health programs.

On the national scene, legislation to include minorities in health care research and service programs has provided an impetus to understand more about other cultures. This issue is being addressed in a number of ways: through national and regional conferences on multi-cultural communication methods; via new guidebooks on how to work with culturally diverse communities;[9] and through a computerized database of minority health-related resources at local, state, and national levels.[10]

An approach to achieve culturally appropriate materials is to use health practitioners who are members of that culture to develop the materials. During 1992 and 1993, the National Cancer Institute used this approach to develop nutrition materials for seven different cultures.[11]

When resources are limited, perhaps the most practical approach to cultural suitability is to ask the advice of members of the culture during the planning and development stages, and then use the learner verification and review (LVR) process described in Chapter 10 to assess suitability and to make any needed revisions.

Summary of methods to obtain cultural suitability of materials

1. Read the references on methods to develop culture suitable materials.
2. Obtain advice from members of the culture during the planning/development.
3. Produce materials in the languages of your patient population.
4. Use practitioner panels from the culture to develop health materials.
5. Assess the suitability of draft and finished material using the LVR process.

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6

Writing the Message

"My patients have a mix of literacy skills. Can one material satisfy all?"

The health community is a "written culture": print materials are used extensively in all aspects of health care. Patients are expected to read and remember, to learn and comply with the advice presented. We see it as their responsibility.

Nurses and doctors have responsibilities too: to provide written materials that are easily understood, that are motivating, that help the patient to learn, and that are culturally suitable. How well are these responsibilities being lived up to?

The Mismatch Between Instructions and Patients

Although many written materials are suitable, most current materials have shortcomings that make them difficult to understand. The most serious shortcomings are:

- Too much information is included. This will discourage poor readers and will tend to obscure the priority information for all readers.
- Readability levels are too high for the average patient.
- The reader is not asked to interact with the material, so this opportunity for better learning and recall is lost.
- Difficult/uncommon words are seldom explained with examples.

What are the readability levels of current health education materials? From Figure 6-1, we see that the patient education materials have a wide range of readability levels, and that more than half the materials are too difficult for the average American adult.

The materials in Figure 6-1 were drawn from health instructions on a wide variety of topics and from many sources.[1] Does this mean we should discard all our on-the-shelf materials with reading levels above 10th grade? Such action is probably not necessary. Chapter 9, Tips On Teaching, presents ways to help patients understand at least the most important information contained in these materials.

The readability mismatch leads to another undesirable result—a reduction in motivation to comply with the instruction. When patients struggle to read and understand an instruction, they become discouraged and lose a sense of self-efficacy. They may feel that if it is so difficult to read, it is probably too difficult to do anyway, so why try?

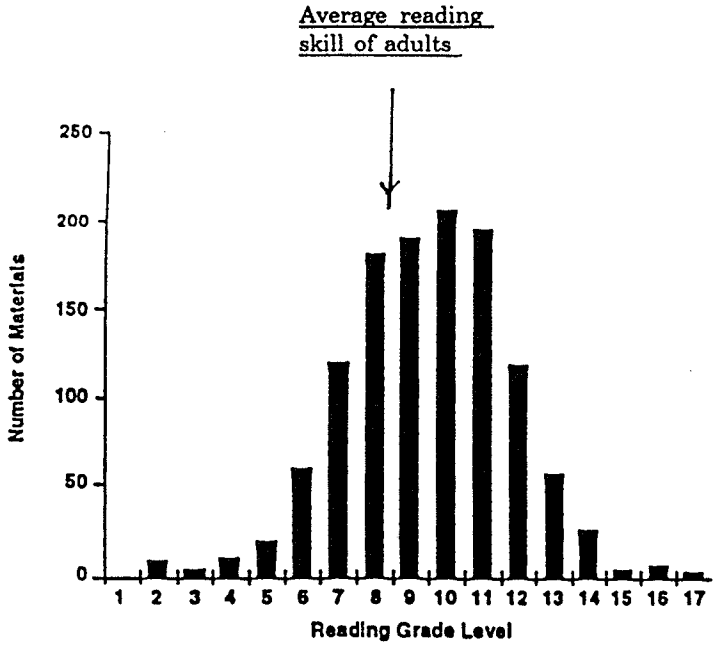
Noncompliance with difficult instructions is not surprising, but is the converse true? Do easy-to-read materials increase compliance? Bradshaw, Ley, and Kincey provide convincing evidence that they do. Patients not only have a higher rate of compliance, but they remember better and make fewer mistakes.[2] Fredrickson (1994) describes the beneficial effects of easy-to-read health materials for people with higher literacy skills—even those with college degrees learned and remembered more from the simpler materials.[3] Simpler instructions help everyone.

The good news is that patients don't lack intelligence—nearly all of them can learn anything they need to know about their health care. The even better news is that nurses and doctors can learn fairly rapidly to improve written instructions so they are more suitable for their patients.

In this chapter you will find strategies to reduce the literacy and learning mismatches noted above, and ways to plan, write, and produce health care materials that work. We suggest strategies that would include the target audience—your patients—to help in your planning and writing tasks.

FIGURE 6-1

Readability levels of 1,234 health-care materials compared with the average reading skills of adult Americans. (*Source:* C. C. Doak, L. G. Doak, Patient Learning Associates, Potomac, MD)



Other resources for clear writing: The literature is rich with advice on clear and simple writing. Flesch (1946) and Bailey (1984) suggest we should write the way we talk, and they offer other useful advice.[4,5] Duffy (1985) suggests ways to make text more usable to readers.[6] Doak (1985) applied these principles to patient education materials.[7] White (1988) and Jonassen (1982) offer advice on typography and layout to make text easier to read.[8,9] Wileman (1993) offers ways to make visuals more "readable."[10] And during the past few years a number of booklets and handbooks have been published on this subject by government agencies.[11,12] These authors offer useful advice and we draw upon them as well as other sources for the practical guidelines of clear writing offered in this chapter.

Simplifying Materials: The Planning Phase

A little planning makes the writing go easier. An hour or two spent in planning can save days or weeks later on. The planning steps you use will depend on your own circumstances and objectives, but we suggest you consider those shown in Chapter 2, Box 2-2, and those listed in Box 6-1 below.

Defining the audience

Defining the audience seems like such an obvious first step, but it is often overlooked. A few moments to consider the makeup of the target audience(s) can pay big dividends. For example, if you are writing a booklet on managing

BOX 6-1

Planning steps for written materials

DEFINE AND INVOLVE THE AUDIENCE

- Ages, genders, cultures
- Their literacy levels and readiness to learn
- Which learning theories apply?
- Include a few patients in the planning and writing phases

LIMIT THE OBJECTIVE(S) AND THE MESSAGE

- Decide on the minimum educational objective
- List topics that *must* be included

WRITING AND PRODUCTION PHASES

- Select format(s): description, story, Q & A, audio, video, etc.
- Decide how to include interaction
- Decide which words or phrases need explanatory examples and include them

QUALITY ASSURANCE

- Plan to test the draft and the final with a few patients/clients
- Use the checklist, readability test, SAM (Chapter 3)
- Document the assessment results

incontinence, you would write it at a lower readability level because this older audience has twice the functional illiteracy rate as the general population. Also, you would use larger type, perhaps 14 point, for easier reading. If writing about getting a pap smear or a mammogram for middle-aged women from specific countries or ethnic groups, you might consider including men among your expected audience for they may be the decision makers for these matters in the family.

Consider the learning and behavior theories that apply in your instructional situation. For example, the stage(s) of readiness to learn and comply is a key factor in selecting the content and approach for an instruction. If your audience may be in any stage of readiness (from creating awareness to maintaining a behavior) you may need to include topics suitable for all stages. (See Prochaska and DiClemente, 1985, Coping and Substance Abuse, Academic Press, New York, pp. 345–363.)

Involving the target audience in materials design

An ad hoc design assistance group or focus group made up of a few patients/clients can be of great help during the planning and writing phases.[13,14] Patients are almost always quite willing to serve as unpaid collaborators and can make valuable suggestions. For example, in preparing a new booklet on good nutrition for pregnant teenagers, nurses and nutritionists at the Philadelphia Health Department enlisted the aid of pregnant teens from three different cultures.[15] For healthy lunches (a topic in the draft booklet) teens were advised on healthy foods and how to prepare them. At an informal focus group meeting, the following dialogue ensued:

NURSE: And so we suggest you select baked or broiled foods, rather than fried.
TEENS: But we can't do that!
NURSE: Why not?
TEENS: Because we go to the food truck.
NURSE: The what?
TEENS: We buy lunch from the food trucks outside where we work.
NURSE: Oh.

The draft booklet was modified to explain how to make healthy lunch selections from a food truck, and to ask the food truck man to carry more healthy baked or broiled foods and more fruits and salads.

When working with a focus group, provide samples of possible choices and get the opinion of the group to guide your selection. What you ask in the interview session is influenced by what you wish to find out. Listen carefully. Listen more than you talk. Listen for their vocabulary. If they say "shots" instead of "immunizations" or "injections," perhaps their word should be used in the instruction. Take notes, have someone else take notes, or tape the discussion. You are not obliged to heed the advice you get, only to consider it. An hour spent this way can stimulate your own ideas and boost your project considerably.

In lieu of a focus group, individuals from the target audience can help. Writers have used individuals from WIC groups or Head Start parents to help. A health educator in Boston enlisted the help of prostitutes to select the most appropriate words in an AIDS pamphlet intended for them.[16] In addition to wording, the target audience can aid in the suitability of illustrations and content.

Some nurses have enlisted the aid of hospital patients, one at a time. Patients are pleased to be asked their opinions, and the comments from even one or two patients can offer valuable insights.

Limiting the objective(s)

Limiting and defining the learning objective(s) are sometimes the hardest parts of the writing process. The objective may be defined by first doing a needs assessment. Another approach is to ask, "What effect or outcome do I want for the patients? What are patients to *do* with the instruction?" Are they to learn to perform a new procedure? Is the objective to strengthen an attitude; to move the person to seek help or advice; to provide new information to ease a worry? The answers to these questions can help to define the core concept (that is, the theme or main idea). An example of a limited objective for a hypertension instruction is shown in Table 6-1.[17]

Notice that a number of other possible topics are *not* included in Table 6-1, for example, reduced weight, cutting down on salt, getting more exercise, regular physical exams. These topics, although important, are not consistent with the stated objectives. They would be covered in separate instructions. Several short instructions that are easy to digest are almost always better than one larger instruction that looks difficult simply because of its size.

You may want to stop at this point and take a look at a current health care pamphlet or booklet used in your health care setting. What appears to be the objective or core concept for the reader? How much of the information in the pamphlet could be cut out and still meet the objective? It is more difficult for patients to remember large amounts of information. Solid pages of print are a turnoff for most of us—and for those who have trouble reading they are a *stop sign*. So we need to start with this question:

TABLE 6-1

Example: Limited education objectives for a hypertension instruction

OBJECTIVES (FOR PATIENT)	"MUST INCLUDE" TOPICS	INTERACTIVE QUESTIONS
1. Understand what hypertension is	What is hypertension and what is patient's blood pressure?	What is high blood pressure? What is your blood pressure (HBP)?
2. Follows medication regimen	Dangers of hypertension	What are some dangers *to you* from HBP?
	Taking medicine can control hypertension	How can you lower your blood pressure?
	Must take medication every day even if you feel okay	What about taking medication on days you feel okay?

"What is the least I can include to give the reader the information and motivation needed to change behavior or perform the procedure?"

Before presenting the guidelines for writing, you may want to refer back to the five guidelines for health instruction material in Box 2-2, Chapter 2. We will assume you have done this and, if you are preparing to write an instruction, you have already limited your objective to the core concept you want to present, and have defined the key information your instruction must contain to meet that objective.

Guidelines for Writing

The practical guidelines shown below are the essence of the best the authors have found in the literature. The guidelines are few in number and, with a little practice, are easy to apply.

1. **Write the way you talk; use active voice.**
2. **Use common words, and, on average, use short sentences.**
3. **Give examples to explain hard words.**
4. **Include interaction and reviews.**

Bailey (1984) tells us to "write the way you talk."[18] If you do this, three beneficial things happen to the written material:

1. *It is easier to read.* The readability level automatically drops several grades–often five or six grade levels.
2. *It becomes more interesting to read.* Your patients will *want* to read it.
3. *It is easier to understand.* The extra words we use when we talk—the redundant or amplifying words—give the reader additional paths to understand the message.

Perhaps the best way to write the way you talk is to imagine that you are facing a patient and telling him or her your message. Say it out loud and write down exactly what you've said. Don't worry about grammatical accuracy; this is just a draft you can revise later.

When you write as though you are talking to a member of your target audience, your writing will have a more personal and friendly tone and it can be just as accurate as more formal writing. Consider the two AIDS instructions shown in Box 6-2, one written formally, the other written simply.

Active voice

When the subject of the sentence is the doer, you have active voice, and that's easier to read. A message written in active voice is more likely to move the reader to action than the same message in passive voice. Passive voice is signaled by the verb *to be* and usually by the word *by*, and you will often find a helping verb included too. Examples of sentences in active and passive voice are shown in Box 6-3.

BOX 6-2

A comparison: formal vs. simple writing

FORMAL WRITING (AIDS INSTRUCTION)	SIMPLE WRITING (AIDS INSTRUCTION)
Sometimes the preliminary test results are positive when the person is not infected. A positive AIDS test should be reconfirmed by a different lab technique to assure that it is accurate.	If your AIDS test comes back positive, you may not have AIDS. Have the test done again using another method. Sometimes the first lab test gives a false reading.

BOX 6-3

A comparison: active vs. passive voice

ACTIVE VOICE: (BETTER)	PASSIVE VOICE: (NOT AS GOOD)
Take your medicine with your meals.	Medicine should be taken at mealtimes.
Warn patients about side effects.	Patients should be warned about side effects.
The nurse will bandage your arm.	Your arm will be bandaged by the nurse.

Use common words

Which words are common and are understood by nearly all patients? The words you would use in talking with a nontechnical friend tend to be more common than words you would write. Another way to assess how common a word may be is to look it up in the *Word Frequency Book* to see where it ranks among 86,000 English words.[19] Words that rank among the first 3,000 are common words.

Short words tend to be more common and are preferred, for example *doctor* vs. *physician*. However, three classes of words that may seem very common are problems because they may mean different things to different patients. These are words that represent *concepts* and *categories*, and express *value judgments*.

Concept words describe a general idea or an abstract framework or reference, and are often misunderstood. Diabetics are instructed to eat a "variety" of foods, and to keep "in balance." Another example: the patient who reads "Keep your glucose level within a normal range" may know the meaning of normal, and that she has a range in her kitchen. To make such concept words understood by patients, include an example immediately after using them. In the latter example you might include, "This means to keep your blood sugar somewhere between 70 and 120; that is the range of sugar numbers that means your blood sugar is normal—that it's okay."

Category words describe groups of things, such as the categories of products listed in the Yellow Pages of the telephone book. Many people with low literacy skills can't use the Yellow Pages because they don't understand the

category words. For example, if they want to rent a house, they won't find it under "house," but under "real estate–residential–rental." The problem with unexplained category words is illustrated in the following learner verification dialogue between a health educator and Fred, a kidney dialysis patient. The patient has just read a paragraph telling him to eat red meat, and to avoid eating shell fish and poultry.

EDUC: Fred, you've just read this page. Could you tell me what it is all about?
FRED: It's about the kind of meat I'm supposed to eat.
EDUC: You've got the idea. What kinds of meat do you eat for supper?
FRED: Oh, steak or fried chicken.
EDUC: Do you eat chicken often, or only once in a while?
FRED: Oh, all the time. I like fried chicken.
EDUC: What about poultry?
FRED: I never eat poultry; we're not supposed to have that!

Value judgment words often describe amounts or thresholds for action. Here are some examples (italicized):

One post-op. instruction reads, "If you have *excessive* bleeding, call your doctor." How much blood is excessive? The nurse and doctor know, but chances are the patient does not.

Exercise *regularly*; don't lift anything *heavy*; get *adequate* rest.

You can resolve these problems by using more specific words rather than value judgment words, or by explaining what is meant by the value judgment word. For example, "adequate rest" might be explained: "For the next week you need a lot of rest and that means at least 8 hours of sleep each night and a 2-hour rest period lying down each afternoon."

Short sentences

In general, short sentences are easier to read and understand compared to long sentences. A good rule is to keep sentence length under 15 words; under 10 is even better. But there are exceptions. Sentences should be kept short, but not at the expense of conversational style. If it is more natural to express some parts of the message in a sentence that is longer, write it that way. The redundant words and natural flow of the language will make it easier to understand.

Give examples to explain uncommon words

In addition to concept, category, and value judgment words, many words used in health care settings are uncommon and need an example if they are to be understood. For the reader, the example may call to mind a mental image so the meaning of the word is perceived and more easily remembered. For example, "As the prostate continues to grow, it can squeeze the urethra—like pinching a straw—and interfere with the normal flow of urine." The words "pinching a straw" provide the example and may create a mental image.

Examples also lighten up the text and make it more interesting to read. One of the most frequent comments by reviewers of the manuscript for this book was that they liked the many examples given.

Include interaction

Perhaps more than anything else, interaction can make instructions easier to learn and remember. And it is one of the least used features in health instruction. An analysis by the authors of 100 materials revealed that only one out of five included any interaction with the reader. Some ways to include interaction are:

1. Write a short question and leave a blank line for the patient to write in the answer.
2. Ask the reader to circle one among several pictures to make the right choices.
3. Pose a problem, and ask patients to write or say out loud how it can be resolved. Or ask the patient to demonstrate what was read.
4. Ask a few questions verbally after a patient has read the material.
5. Ask a group of patients a question and let them discuss their answers.

An example of how interaction can be included in written material is shown in Figure 6-2.[20]

FIGURE 6-2

Interaction and review are included via questions to be answered

Remember, you <u>can</u> control your high blood pressure.

Check which step you will try first:

___ Use less salt

___ Be more physically active

___ Lose weight

___ Quit smoking

___ Drink less tea, coffee, soda with caffeine, and less alcohol

♥ ♥

The friend who will help me is _____

I will reward myself by _____

The kind thing I will tell myself if I make a mistake is _____

I will have my blood pressure checked _____

I will call my doctor if _____

Writing models

You may be wondering, "Which information should I present first? What should be the sequence?" Depending on your purpose for the patient, the answer can be found in one or a combination of models as shown in Table 6-2.

As noted in Chapter 2, the sequence of information based on the health belief model is (1) you are at risk, (2) but there is something you can do about it, and (3) you will get personal benefits if you do. An example instruction based on the health belief model is shown below.

"You are in the high-risk group for cancer. But you can cut your chances of getting cancer if you'll do just three things: (1) quit smoking now, (2) eat less red meat, and (3) eat more fruits and vegetables.

Take a smoking cessation class, and get "the patch" to help you quit smoking. Instead of steaks and roast beef, eat fish or pasta, and add fruit to every meal. Eat red meat only once a week. You can do this. Your spouse will help you.

If you do these three things now, you'll have a much better chance to live to see your grandkids grow up, and you will feel better and look younger."

The story model builds empathy and interest by engaging the reader's emotions and feelings in the message. Story models usually involve some controversy or tension to build interest. Stories can also have powerful cultural attractiveness and may be the natural way that information is transmitted in that culture. A dialogue with or without pictures carries the story and holds attention via the "power of the overheard conversation."[21] One form of the story model is the adult comic strip or photo-novella. This format is illustrated in Chapter 7, Figure 7-19.

The medical model is the least suitable of all the models for patient instructions. Both the content and the sequence of information are in conflict with what most patients need to know and want to know. This sequence of information is more suited to subject instructions for health practitioners. The medical model sequence is usually presented as follows: (1) description of the disease, its history, and the disease process; (2) statistics on its frequency, cure rate, etc.; (3) various forms of treatment; (4) the efficacy of the treatments and

TABLE 6-2
Writing models and their purposes

WRITING MODEL	PURPOSE OR OBJECTIVE OF THE INSTRUCTION
1. Health belief model	To change a patient's behavior(s) and attitude
2. Procedural model	To present a series of steps that must be done in a specified sequence
3. Story model	When raising empathy and interest is needed to gain attention and acceptance
4. Newspaper model	Most important part is given first; next parts are in order of descending importance; helpful for poor readers
5. Medical model	To teach health-care personnel, and for the few patients who want medical details

medications; (5) side effects; (6) other information. The medical model is described here so you will recognize it *and avoid using it for patient instructions.*

Additional Ways to Make Text Easy to Read

Use headers to group items together under a common headline. These captions are sometimes called advance organizers because they organize our thinking to anticipate the content of the text that is coming next. Poor readers don't organize well as they read. Groupings make it easier to remember. The best headers are those that express a complete thought or idea. These are better than one-word headers. (See Chapter 5, Figures 5-1 and 5-2, for examples of headers used for chunking.)

Place the key behavior information first, in the most powerful position. Just as first impressions often stick when we meet others, so too, the first part of the message is remembered best. The last part is a close second in importance. We often experience this when we can say the first or last line in a poem or a song, but can't remember the rest of the words.

Use the favored, up-front position for the core of your message—put the most important information or behavior in the position most likely to be remembered in your pamphlet or instruction.

When writing a sentence or paragraph, **give the context first,** before presenting new information. Doing this provides a place—a framework—for new information to fit before it arrives. When the context is given last, we must carry all the information along in our short-term memory. We must try to remember it all until we get to the end of the sentence or paragraph or list. Examples of context given first and last are shown in Box 6-4. In both examples the context words are in italics.

Typography and Layout

The type style and layout can create a user-friendly appearance so that patients want to read the material. Poor choices of type style and layout can

BOX 6-4

A comparison: Context first vs. context last

CONTEXT FIRST (EASY TO GRASP)	CONTEXT LAST (HARD TO GRASP)
You can lower the amount of cholesterol in your body by reducing animal food products and substituting low-fat or nonfat for whole diary products and increasing dietary fiber.	Reducing animal food products and substituting low-fat or nonfat for whole dairy products and increasing dietary fiber *can lower the amount of cholesterol in your body.*

do just the opposite. White (1988; see reference 8) offers extensive advice and many examples on how to achieve the former. The guidelines in Box 6-5 on the following page summarize how this can be done. Figure 6-3 on the following page shows a good example of the application of the guidelines.

Following is a sample of type fonts from the easiest to the hardest to read for readers at all skill levels, and samples of several type sizes.

Easy to read
- Serif Font (serifs are the little bars on the bottoms and tops of the letters)
- Sans-Serif Font

Hard to read
- ALL CAPITALS— NOTE THE RECTANGULARITY OF THE PRINT.
- *Italics and handwriting are difficult to read.*

This is 10-point type—more difficult to read.

This is 12-point type—much easier to read.

This is 13-point type—the best size for many materials.

TEXT WITH ALL CAPITALS IS DIFFICULT FOR READERS AT ALL SKILL LEVELS. Since all words are rectangular in shape, the reading cues provided by word shapes are lost. For example, notice the difference in the shapes of the word TRY and try—one can read the lowercase word almost by its shape alone. It is not necessary to read each letter.

One layout feature that can greatly increase a patient's perception of the importance of a booklet or pamphlet and takes less than a minute to do: Include a line for the patient's name on the cover. Some clinics that have done this have found that patients bring their booklets/pamphlets back with them on return visits, where before many had discarded the pamphlets.

Special Problems

Some written materials used in health care present special problems for patients with low literacy skills and often for high literacy patients as well. These materials are: (1) consent forms, (2) questionnaires, (3) lists and graphs. (Lists and graphs are discussed in Chapter 7, Visuals and How to Use Them.)

Consent forms: methods to simplify

Meade (1992) describes the reading difficulty and other problems with most consent forms used in health care.[22] The average readability of 44 consent forms was found to be at the mid-college level—hardly understandable by the average patient. Meade points out that making consent forms understandable is a responsibility shared by nurses because of their roles in patient care and research projects.

BOX 6-5

Guidelines for typography and layout

1. TYPE STYLE AND SIZE

- Use serif type and lowercase lettering, except where grammatically necessary to use capital letters.
- Use 12-point type or larger. (see example of type sizes).
- Do *not* use large or stylized initial letters (the big, fancy letters sometimes put at the start of a booklet or chapter).
- In general, do *not* use reverse print, that is, white on black.

2. LINE LENGTH

- Try to limit line length to 30 to 50 characters and spaces.
- Make the left edge of lines rectified (that is, all in a line).
- Leave right ends of lines ragged.

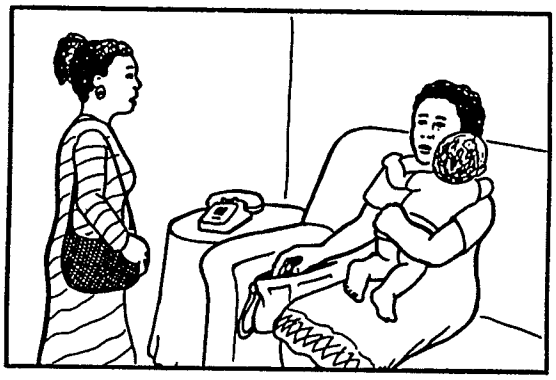
3. LAYOUT OF TEXT ON THE PAGE

- Leave some white space on the page to avoid a look of solid text.
- Use headers ("road signs") underlined or in bold print to introduce each new topic and to break up the appearance of a page of solid text.
- Use an eye-catcher—a box or larger font or an indent—to draw readers' eyes to the most important information.

FIGURE 6-3

A user-friendly layout that follows many of the guidelines (*Source:* Health Literacy Project, Health Promotion Council of Southeastern Pennsylvania, Philadelphia)

Where to go ?
The Emergency or the Clinic?



Frances: **What is wrong with the baby?**

Shirley: **She is sick. Her nose is running and she has been crying a lot.**

Frances: **Yes, her head feels a little warm, too. Maybe she has a fever.**

Shirley: **Well, I am taking her to the Emergency.**

Frances: **I think you should take her to the clinic, not to the Emergency.**

One way to find common words to replace difficult ones is to ask the lawyer or consent form writer for the meanings of difficult words in plain language. Write down their verbal responses and make the changes. For example, Meade presents the following comparative word list:

ORIGINAL WORDS	*SIMPLER WORDS*
chemotherapeutic agent	*anticancer drug*
determine	*find out (or see if)*
difficulties	*problems*
participate	*take part*
venipuncture	*draw blood*
intradermally	*given under the skin*

Consent forms are often written by highly trained medical staff and may then be modified by lawyers. The lawyers tend to include the long sentences and difficult words found in the law. However, this is not necessary. The legal demands and the literacy demands are not incompatible. A draft of a simplified living will consent form is shown in Figure 6-4. The original tested at the college level. The simplified version in Figure 6-4 is at about the 4th-grade level.

Questionnaires

Questionnaires present special problems for low literacy patients because (1) the purpose of the questionnaire is often not understood, (2) the readability level is often too high, (3) multiple formats are often employed for the answers, (4) they are too long. These problems can lead patients to guess at the answer. The result may be incomplete and confusing data, or no data at all. For example, a questionnaire mailed out to homeowners who did not request disaster relief aid (and to find out why not) was written at about the freshman college level. Very few responses were received.

Mayo and Rose (1991) report on research to develop a questionnaire to help screen out possible HIV (human immunodeficiency virus)–positive blood donors.[23] They found that the most reliable format for the questionnaire was a combination of pictures and short questions. Subsequent research for a questionnaire suitable for all blood donors, including those with low literacy skills, led to the development and testing of an interactive computer-based method to quickly obtain the information needed.

To make questionnaires acceptable and easier to understand, explain the purpose of the questionnaire in simple language. Give an example of the purpose. You may find it helpful to include a testimonial or supplemental explanatory material, possibly in the form of a set of pictures, a short video, or a verbal explanation.

Questionnaires are often developed by committees, and it shows. One difficult-to-understand questionnaire contained six different formats to answer the questions. Formats included were true/false, write in an answer, check a box, select a number from four possible answers, place an "X" on a continuum line, and darken a dot next to the chosen answer. Instead, use only one format for all questions, and show an example of how to answer and

FIGURE 6-4

An easy-to-read living will consent form (*Source:* Dr. Jane Root, Falmouth, Maine)

LIVING WILL

(Attorney Review Required)

To my doctor:

There may come a time when I can no longer tell you what I want. I may have no awareness and my mind may no longer work so that I know who I am or where I am. I may be near death and have no chance of recovery. Special equipment might be used to keep me alive a little while but it cannot bring back my health. If this is the case, I want you to take the following action:

(Sign only where you want your doctor to *take* the action.)

1. Use whatever you need to control pain.
   Signature: _____ Date: _____
2. *Do not* try to restart my heart or breathing if they should stop.
   Signature: _____ Date: _____
3. *Do not* use a respirator to keep me breathing.
   Signature: _____ Date: _____
4. *Do not* give me food and water through a tube.
   Signature: _____ Date: _____

Your signature: _____ Date: _____

Print or type your name: _____

This form was signed willingly while I watched:

Witness #1: _____ Witness #2: _____

Address: _____ Address: _____

Notary Public Statement
(for states which require this)

If you plan to travel, you should have this notarized.

You *must* give your doctor or other health provider a copy of this form to be sure your wishes are followed.

List here the names and addresses of those to whom you gave copies.

Name	Address
_____	_____
_____	_____
_____	_____
_____	_____

Remember: You can stop or chage this notice at any time. If you *do* change this notice, be sure to tell your doctor or other health provider.

mark the response. If a second answer format must be used, separate the questions by format, and tell the reader that you are changing the format for the answers and how to respond.

Patients with low literacy skills lose patience with long questionnaires, and may not complete them, or may just mark the answers at random. Experience has probably taught them that all they need to do to satisfy the request is to turn in a completed questionnaire. To prevent this from happening, keep the questionnaire short by asking only for the information that you definitely plan to use immediately or in the near future.

Summary

Think of the subject for a new health care instruction you may soon be writing. Then think how you will apply each of the points given in the summary below when you write the instruction.

PLANNING STEPS

- Define and involve the target audience.
- Limit the objectives and the message.
- Decide on message format, interaction, and examples.
- Plan to test for quality assurance.

WRITING THE MESSAGE

- Write the way you talk; use active voice.
- Use common words and short sentences.
- Give examples to explain uncommon, concept, category, and value judgment words.
- Include interaction and review.

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7

"What are the do's and don'ts in using visuals?"

Visuals and How to Use Them

Confucius was right when he said that a picture is worth a thousand words. Visuals enhance communication for everyone.[1] For poor readers the significance of visuals is even greater. This may be the only way that they can "read" and understand the health message.

This chapter points out the special needs of poor readers, and provides guidance to make visuals responsive to those needs. Your patients will obtain the full benefit from the visuals used in your instructions if you follow these guidelines.

This chapter is organized in three parts:

- Part 1: Rationale for Using Visuals and the Special Needs of Poor Readers
- Part 2: How to Select, Design, and Use Visuals Effectively
- Part 3: Making Lists and Graphics Understandable

Part 1: Rationale for Using Visuals and the Special Needs of Poor Readers

Visual presentations have been shown to be 43 percent more persuasive than unaided presentations.[2] The research on visuals and graphics shows that the memory systems in the brain favor visual storage, so when a message is visualized we remember it better than if we just read it or hear it.[3,4,5]

All of us learn through the five senses: seeing, hearing, touching, tasting, and smelling. Our learning styles are based on these sensory modes. We tend to use one learning style more than another, and for many people, visuals are

a preferred style. Especially important for health education reasons, complex concepts can be understood easier through visual presentations. Our emotions are easily stimulated through the visual sense, so we respond quickly to what we see. The use of visuals in developing countries provides a rich resource to draw upon for practical examples of their value in health education.[6–11]

Unique characteristics of visuals for learning

Memory system factors: Everybody understands and remembers better when they *see* the message. The brain has more access routes and greater storage capacity for pictorial images than for words.[12] Therefore, details that might otherwise be lost can be reconstructed through visual association.

You can recognize these factors based on your own experiences. For example, do you remember saying, "I remember what the house looks like, and that it was next door to a church, but I've forgotten the name of the street." Although names and words may not be remembered, you can access enough of the image to reconstruct the picture.

Learning style preferences: Do you prefer to learn from pictures? Many people do. Some people have a visual learning style, so they need to see information as a way to understand it. The more vivid and real the visual impression of what is to be learned, the more likely it will be remembered.[13] Visuals make information vivid and real. Most poor readers rely on visuals and the spoken word. They try to get the sense of the instruction without having to struggle with text.

Complex concepts: Visuals can show a step-by-step procedure and make an entire action sequence seem easier to learn than explanations by text. The visuals can be logically grouped so that they become a memory set for easier recall.

Emotional impact: Visuals carry memorable emotional messages far surpassing words. In Figure 7-1, compare the emotional impact of the visual with that of the same message in text.

Another part of the rationale for using visuals is the fact that public expectations about information have changed. People expect to have their health messages visualized; the importance and value of the message is often equated with the quality of the production.

Special needs of poor readers

To understand the special needs of poor readers, it is helpful to first review the reading process that applies to all of us. What are the steps we all go through when we read visuals? They are:[14]

- Deciding to read or look (selective exposure)
- Finding the message
- Locating relevant details
- Interpreting the information (selective perception)
- Deciding to remember (or forget) the message (selective retention)

FIGURE 7-1

The meaning of the words become more powerful and clear when translated into the picture. (*Source:* Know the Facts About Fetal Alcohol Syndrome. Native American Community Board, PO Box 572, Lake Andes, SD 57356)

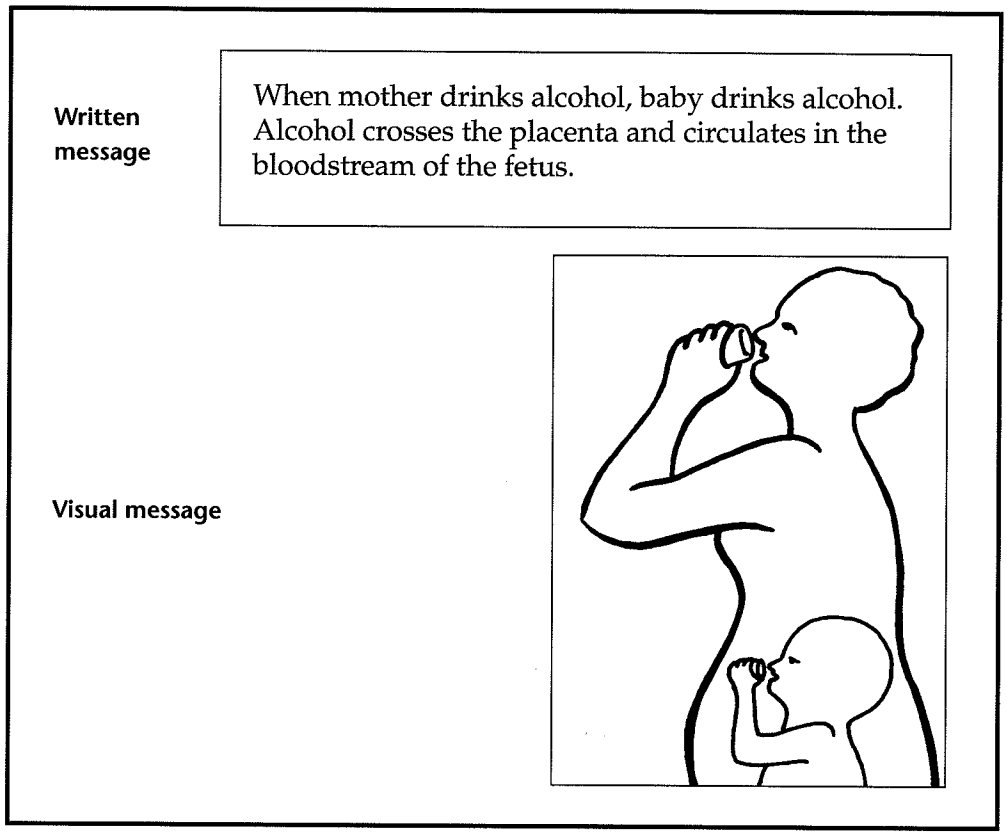


TABLE 7-1

Comparison of reading habits of visuals by skilled and poor readers

SKILLED READERS	POOR READERS
Systematically scan the visual to find the central concept	Eyes wander about page without finding the central focus of the visual
Quickly identify principal features	Skip over principal features
Separate key points from details	Eyes may focus on a detail
Quickly interpret information to arrive at meaning	Slow to interpret perceptual information; interpret words literally

With these steps in the process of reading visuals as a guide, it is possible to gain insight on the special needs of poor readers. Table 7-1 compares the reading habits of skilled and poor readers by using data from research on eye movements during reading.[15] The data point out why you need to think differently about visuals for poor readers.

The special needs of poor readers are revealed in the following ways. They often miss the purpose of the visual due to their random eye movements and their lack of attention to detail on principal features. The logic and experience expressed by the visual are often a mismatch for the poor reader. This mismatch makes it harder to get the meaning of the visual. If the poor readers

cannot figure out the message quickly, they lose interest. For poor readers, not understanding an instruction is a common happening: the person feels that it's just not worth the effort.

Visuals are important and vital to communicate health messages to poor readers. However, not every kind of visual will be effective. The visuals must take into account the special needs of poor readers noted below.

The rest of the chapter discusses and illustrates visuals, lists, and graphs that are directed to meeting the special needs of poor readers.

Part 2: How to Select, Design, and Use Visuals Effectively

Once you have a clear educational objective written out, ask yourself: Can I reduce the amount of text and keep the reader interested by using visuals? Will visuals keep attention focused on the key points? Will a picture story be more likely to motivate the readers? Will visuals help simplify the steps in this instruction?

When you do this planning early in the idea or design stage, you will have a better outcome than if you wait until the draft is completed. To use visuals to meet the needs of poor readers:

1. Concentrate on main message.
2. Reduce the amount of reading in the text.
3. Provide visual cues and interaction.
4. Provide motivation.

1. Concentrate on main message

Because of their scientific origin, many health instructions for patients still include the textbook explanations of the disease process. These explanations usually contain too much detail and rely on a scientific background for comprehension.

Instead, patients need simple, easy-to-understand visuals focused on what they need to do. Four ways to concentrate on the main message are offered.

a. Focus on action patients should take

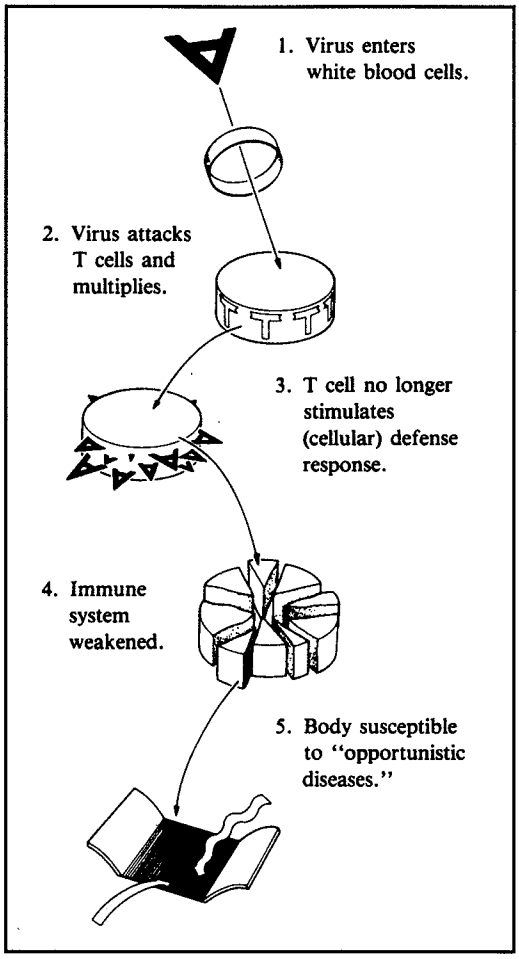
When trying to teach complex concepts, ask yourself: How do I expect patients *to apply* this information? If you focus on the action that you want the patient to take, two good things happen: (1) you attract the patient's attention, and (2) the complex information is cut. Use the visuals to give a sense of realism by helping the patient *see the action recommended.* For example, many times you will find you don't need the etiology of the disease.[16,17,18] People are more likely to take action if they see that the action is reasonable and doable (see Chapter 2).

The next two examples illustrate these points using an instruction for AIDS. Figure 7-2 shows facts about the transmission of disease process and Figure 7-3 on the following page shows the application of the facts to human behavior. It is the application of the facts that are most suitable for poor readers.

A note of caution: Don't use child-like imagery to try to simplify complex concepts. For example, a visual in a diabetes instruction shows dump trucks in the bloodstream delivering sugar to body cells for energy. Understanding this type of metaphor demands skills in inference. These skills are beyond unskilled readers who interpret information literally. The message could be discarded also because "that's for kids."

FIGURE 7-2

Facts about AIDS transmission. (*Source:* U.S. Surgeon General's Report on AIDS, 1991)



Less suitable features for poor readers:

- No patient behavior stated. (What am I supposed to do with this?)
- Visuals are confusing.
- No emphasis on what's important.
- Language is difficult and hard to understand.

FIGURE 7-3

Behavior focus to prevent AIDS. Modeling behavior is more likely to motivate than presenting facts. (*Source:* Family Planning Association of Maine, ME AHEC, 1992)

Plan ahead for safer sex.

1. **Talk about sex. Tell your partner what you would like.**
2. **Practice what you will say. It's not easy to talk about sex.**
3. **Practice using a condom before you need to use one. A woman can unroll a condom onto a cucumber, a man onto his penis.**
4. **Keep condoms handy.**
5. **Don't drink and then have sex. Alcohol may cause "mistakes" to happen.**

You don't have to have sex if your partner will not use safer sex. It's your life. It's your right to protect it.

More suitable features for poor readers:

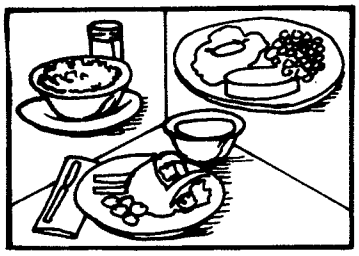
- Reader can identify with the visual.
- The behavior action is clear.
- The language is easy to understand
- Familiar setting helps reader identification.

b. Present behavior (action to be taken) in bite-size steps

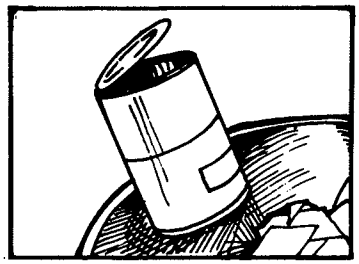
Partitioning the action, task, or procedure by using several "bite-size" images makes it seem easier to do as illustrated in Figure 7-4. It also gives the patient the chance to experience a number of small successes in learning and understanding. The belief that you can do it is one of the greatest motivating forces for behavior change.[19] Poor readers often have a low self-image, so use visuals to build self-efficacy. An overload of information reduces self-efficacy because the reader believes he cannot apply it.

FIGURE 7-4

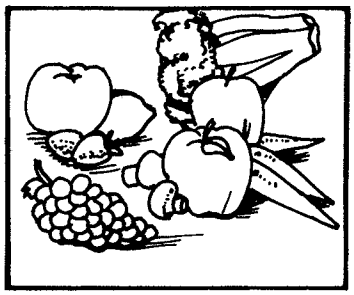
Bite-size pieces of nutrition information make the advice seem easy to follow. (*Source:* "Jackie and Rhonda," National Cancer Institute, Branch of Special Populations, Bethesda, MD, *in press*)



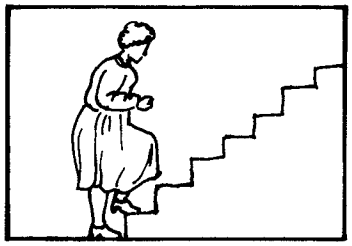
Eat three meals a day. Don't starve yourself and then stuff. It won't work.



Throw away your grease can. Don't eat bacon grease and other meat fat.



Cut down on the number of cakes and cookies you buy. Spend that money on fresh fruits and vegetables on sale.



Take the stairs, and walk every time you can. It really helps to lose weight if you are more active.

Call a friend or take a walk instead of eating. Don't eat because you are bored, upset, or lonely.

Suitable features for poor readers:

- Pictures give an immediate image of what to do.
- One visual is presented for each "bite" of advice, making it seem easy to follow.
- Language is conversational.
- Familiar settings make reader feel comfortable.

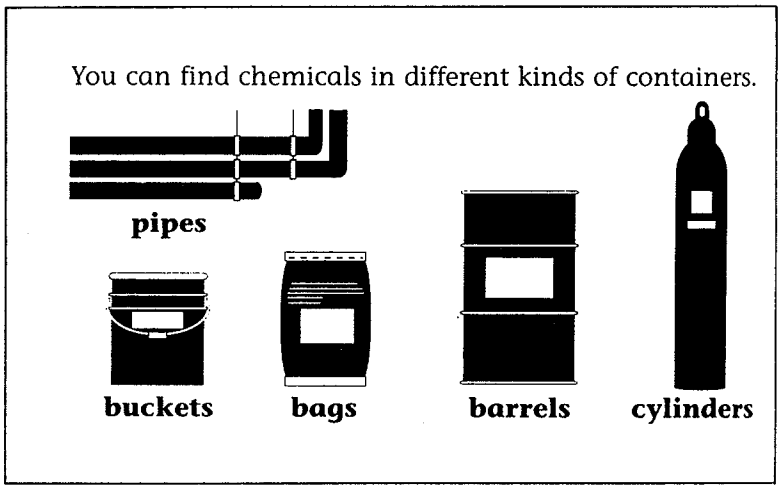
c. Establish a familiar context to help understanding

Identification with the message is easier and quicker when the context in which it is presented seems familiar. Visuals can help establish the context of the familiar: they show people who look like they could be family or friends. The objects can be shown in ways to make them look familiar.

Figures 7-5 and 7-6 are a before-and-after comparison of unfamiliar context with familiar context: Figure 7-5 uses computer graphics clip art to show different types of chemical containers. The computer graphics did not work as a way of illustrating key concepts. When the staff tested the graphics with focus groups, they were found to be "cold" and unclear.

FIGURE 7-5

Stylized images of containers for hazardous materials. (*Source:* The Right to Understand: Linking Literacy to Health and Safety Training. Labor Occupational Health Program. University of California at Berkeley, 1994.)

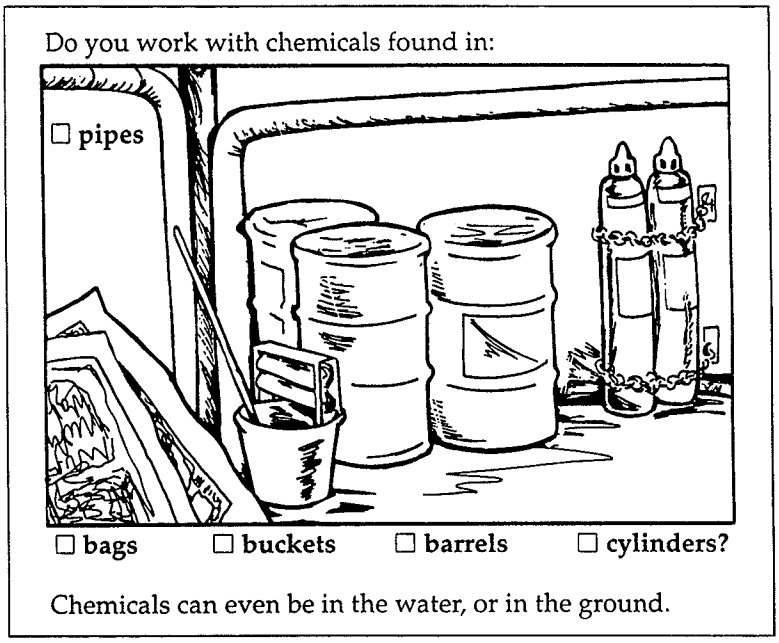


Original version: Unfamiliar context

Less suitable for poor readers.

FIGURE 7-6

Familiar images of containers for hazardous materials. (*Source:* The Right to Understand: Linking Literacy to Health and Safety Training. Labor Occupational Health Program. University of California at Berkeley, 1994.)



Familiar context: Revised version

Highly suitable for poor readers.

For example, workers pointed out that the illustrations of containers were not shown in a workplace setting. Some of them thought the computer graphic used to illustrate a hazardous waste container was a keg of beer. These comments made it clear that some of the illustrations did not help explain the text.

In the revised version, Figure 7-6, the simple line drawings replace the computer graphics. The redrawn illustrations feature the same containers. However, they have been drawn as you might find them in the workplace. It's familiar.

A note of caution: Many readers place more trust in instructions that show people and settings with which they're familiar. Visuals can communicate a definite lifestyle. For instance, some instructions about good nutrition and exercise present the following images that are unsuitable for many people:

- Pictures of a carrot in a briefcase or dried fruit in a desk will lose credibility with many blue-collar workers.
- Pictures of golf clubs and sailing boats as examples of exercise are a mismatch with the lifestyle of many readers.
- Hairdos, facial characteristics, and jewelry or clothing styles unlike those of the reader might not work.

If one pamphlet is going to serve a variety of audiences, look for visuals that will not discredit your message. There is no formula to predict what constitutes a familiar setting for a specific audience. Therefore, test the draft of your material with focus groups or by individual interviews with a sample of the intended audience. "Tell me what you see in this picture. What's it all about?" (See Chapter 10, Learner Verification.)

d. Bridge language barriers

Use visuals to help communicate with non-English-speaking patients. Figures 7-7 and 7-8 appear side-by-side in a book of illustrations for non-English-speaking patients. The book uses pictures and multi-language questions and text for assessment/admissions history, hospital directions, and physical examinations/ medical procedures. Instructions and additional aids are given in the Guide for follow-up of the questions.

2. Visuals can reduce the amount to be read

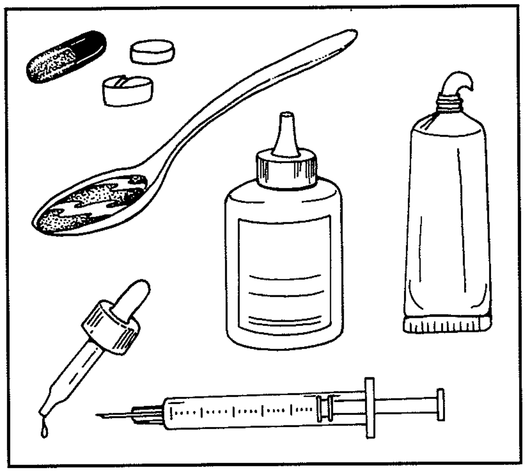
Visuals are much more effective than hard-to-read text; they help clarify steps in procedures and they can show concepts that are hard to put into words such as growth and development of the body.

a. Convert hard-to-read text to visuals

Administrative information is hard to read. Usually the document is long, without breaks; typically it has small print. Readers lose their place partway

FIGURE 7-7

Figure displays and communicates information helpful in a medical history. (*Source:* Do You Understand? [1989]: Literacy Volunteers of America, 5795 Widewaters Parkway, Syracuse, NY 13214)



Suitable features for poor readers are:

- Clear line drawings of commonly used medicines
- Patient can point to the medicine being taken

FIGURE 7-8

Questions in six languages on medication patient is taking. (These accompany visuals in Fig. 7-7 above.) (*Source:* Do You Understand? [1989]: Literacy Volunteers of America, 5795 Widewaters Parkway, Syracuse, NY 13214)

Do you take medicine?

Cambodian

តើអ្នកបានលេបថ្នាំទេ ?

Laotian

ທ່ານໄດ້ກິນຢາບໍ່ ?

Vietnamese

Ban có uống thuốc không?

Polish

Czy bierzesz lekarstwo?

(chĕ bēair´·zhessh lech·carst´·vaw?)

Russian

Вы принимаете лекарство ?

(vē prĭ·nĭ·mä´·yĕt·yĕ lyĕ·kärst´·vŭ)

Spanish

¿Usted toma medicinas?

(ōō´·stĕd tō´·mä mĕd·ē·sē´·nŭs)

Suitable features for poor readers are:

- Corresponding text in six languages for help in asking questions

through the document. Once this occurs, frustration sets in as the reader attempts to regroup and locate the correct line. The similarity of terms and the formal writing style make locating the reader's place in the text more difficult. Also, the subject matter and reading level are intimidating.

Examples of such documents include eligibility requirements for health services, advance directives in terminal illness, and participant responsibilities in WIC (Women, Infants, Children Program). However, the information has to be understood if people are to obtain needed services.

The following WIC list of *Home Delivery, Participant Responsibilities* is an administrative document typical of those used in the health care field. The original document in text form is shown first. This is followed by an alternative presentation of the same information in visual format with a minimum of text (Figure 7-9).

Home Delivery Participant Responsibilities (Original Text)

Listed below are responsibilities of a WIC participant in the home delivery system:

1. A participant must provide the local WIC clinic with good directions to the participant's home. A participant's home must have clearly marked house numbers.
2. A participant must have pets, such as dogs, tied up and away from the delivery person's path.
3. A participant may not ask the delivery person to deliver foods to a location other than the one on the DVR list.
4. A participant may not ask the delivery person to enter the participant's home.
5. A participant, parent/guardian, or alternate must be home the first delivery of each month to receive food.
6. A participant must show the ID/VOC card to the delivery person the first delivery of each month to receive food.
7. A participant may not ask the delivery person to sign the DVR.
8. A participant must be home or must make arrangements with an alternate to be at the participant's home for each delivery.
9. A participant must be courteous to the delivery person. A participant may not harm or threaten the delivery person in any way.
10. A participant must contact the local WIC clinic when any problems occur concerning the delivery person or with the foods delivered.
11. A participant may not ask the delivery person to exchange food or deliver items other than what is listed on the DVR.
12. A participant may not call the dairy or the state WIC office. A participant may call only the local WIC clinic with any questions or concerns.

Using a visual format, Figure 7-9 provides the same information as the list, but presents it in a more visible format and with a positive tone.

When it is not feasible to convert text to visuals, there is another step you can take. Examine the layout and see if you can make the page **look** easier to read.

Layout refers to the arrangement of the text and the visuals on the page—the way that they are laid out. For example, the text may be in columns, or the text may be placed around the page with a visual in the center, or the text may take up the entire page. If there is no relief from solid text, or if the page has an overload of text and visuals, the reader may be turned off by the "busy" appearance and may not bother to make the effort to read it. Layout can attract attention or turn readers off.

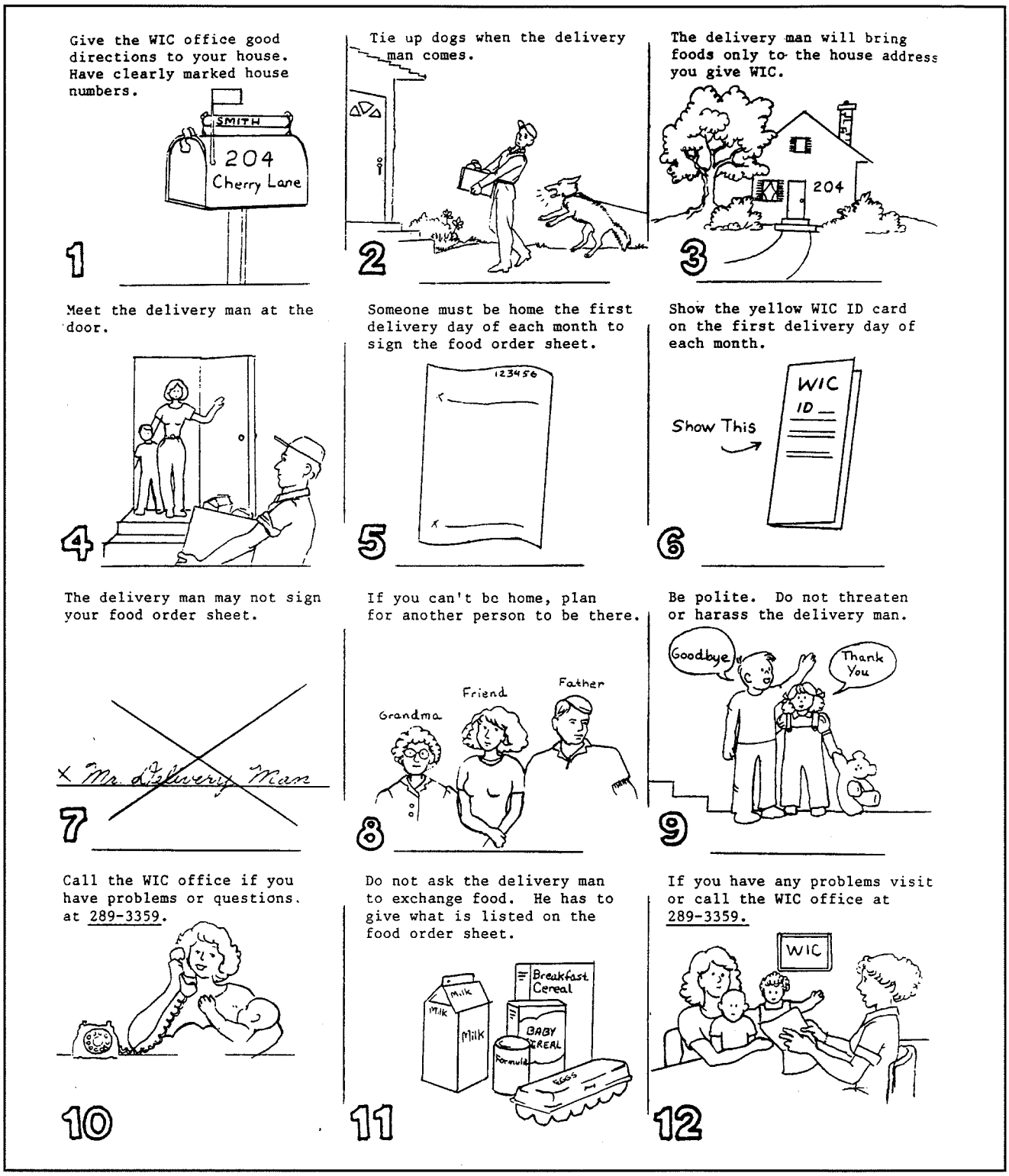


FIGURE 7-9

Responsibilities of a WIC participant in the home delivery system. Text and visual format. (*Source:* Visual format: Patricia J. Welch [1989]: L.D. GRADS Coordinator, Ashland Co. West Holmes Career Center, Ashland, OH 44805-9377)

What makes a page look easy to read?

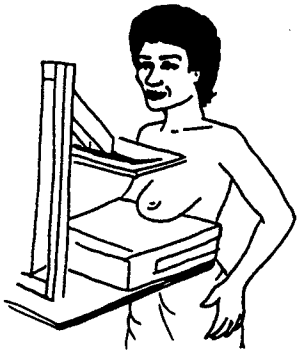
IMPORTANT CHARACTERISTICS FOR LOW LITERACY PURPOSES:

- There is lots of white space to reduce distractions.
- The eyes travel easily across the page in a familiar pattern.
- Visuals have captions or cues to direct the eyes where to focus.
- Print size is at least 12 point, serif font.
- The page looks like it can be read in a few minutes.

b. Reduce text by illustrating the steps in a procedure

Procedural messages are the backbone of health care instructions. Visuals help reduce the reading to explain diagnostic tests, treatment procedures, and procedures for self-management. As shown in Figure 7-10, *place the visual adjacent to its corresponding text* when you are teaching a procedure so that the reader will make an immediate association. Figure 7-10 *shows* the person undergoing the procedure.

How is a mammogram done?



You will stand in front of a machine. The person who takes the x-rays will place your breast between two plastic plates.

The plates will press your breast and make it flat. This may be uncomfortable for a minute, but it helps to get a clear picture.

You will have x-rays of one breast at a time. It only takes a few minutes to have a breast x-ray.

FIGURE 7-10

An effective visual to explain a mammogram. Notice that the view of the woman facing the machine gives the full picture of what is taking place. (*Source:* West Virginia Cancer Information Service, Mary Babb Randolph Center, Morgantown, West Virginia 26506)

Suitable features for poor readers:

- Line drawing, no distractions.
- Illustration shows what the words describe.
- Visual helps patient to anticipate the experience.

FIGURE 7-9 (p. 102)

Suitable features for poor readers:

- The behavior in each item is visualized. If you can't read well, you still get the message.
- Each picture is numbered to help the reader keep her place on the page.
- The language is friendly and courteous; words are shorter.
- Less text to read; it also *appears* easier to read.

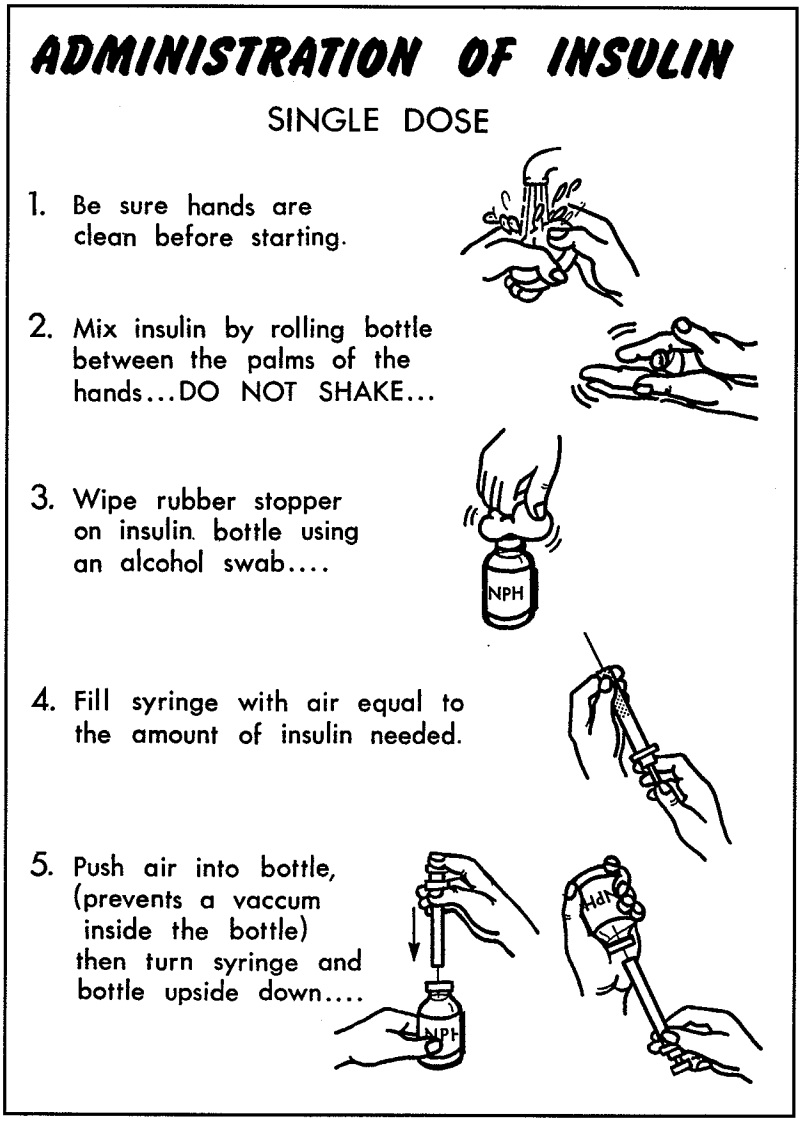
In the next example, Figure 7-11, notice how the *visuals work with the text* to help the reader understand the preparation for giving herself an insulin shot.

A note of caution: The authors have reviewed many instructions where the visuals are placed after the text or on separate pages, usually without captions or explanations. This creates problems: the readers may not know what parts of the text apply to what parts of the visuals, or they may skip the pages following the text. Sometimes the page with the visuals becomes separated and the patient doesn't see it at all.

Using visuals with other media: Combine a pamphlet and a demonstration with a poster or a flip chart to make procedures easier to understand. The pamphlet or instruction sheet provides the basic information. The demonstration shows how to apply it and provides the third dimension for size, shape, and "feel." The visual (poster or flip chart) helps reinforce and clarify the key points.

FIGURE 7-11

Part of a sequence of steps in an easy-to-read diabetes instruction. (*Source:* Understanding Diabetes Mellitus. Buffalo Veterans Administration Medical Center, Buffalo, NY)



Suitable features for poor readers:

- Drawings are next to the related text.
- Visuals emphasize key behaviors.
- Clear background keeps focus on key behaviors.
- Text sequence is numbered.
- Sequence is easy to follow.

c. Show contrasts in growth and development

Concepts of growth and development are hard to put into words. Visuals help people establish in their minds the location of an internal organ or body opening. Be sure to include enough of the outside of the body because that is the beginning point for easy identification. Cross-sectional views and anatomical drawings from medical textbooks are seldom suitable for patients with low literacy skills.

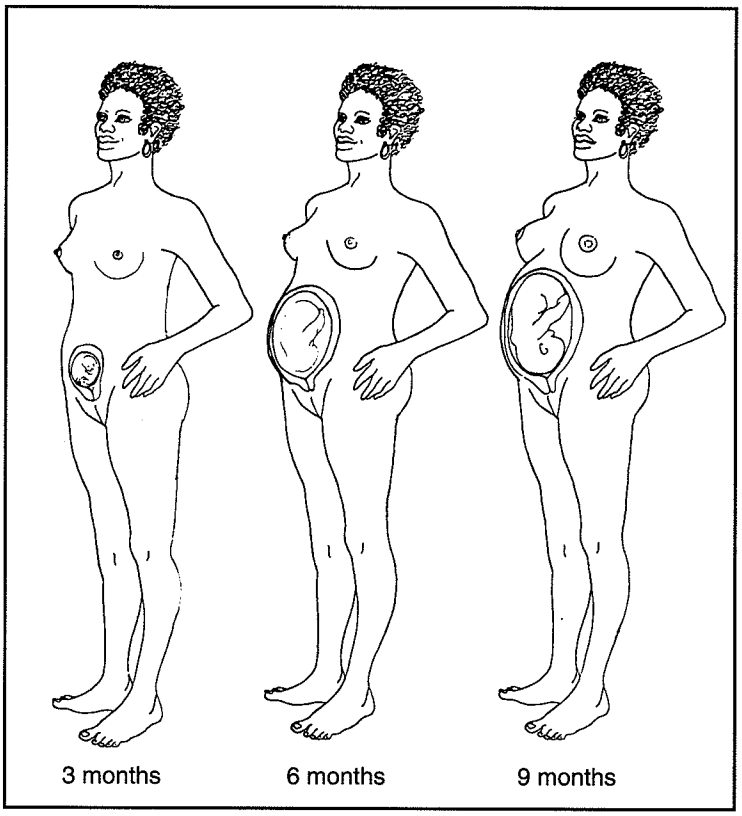
Figure 7-12 is a series of visuals to show contrasts that help patients understand the stages of growth and development of a fetus during pregnancy. Think of the number of words you'd have to use to show this!

Use visuals effectively: Internal parts of the body "come alive" when models made of synthetic material are used to explain a procedure. For example, if you are teaching a part of the body that is unfamiliar, such as the rectum, use a visual (chart or poster) first to orient the patient to the body. Then use a model as a detailed visual to provide the specific information and to stimulate questions from the patient.

Models give a three-dimensional perspective that helps in understanding size and shape. Some models, such as those for teaching breast self-examination, are also useful to teach patients the tactile sense.

FIGURE 7-12

An effective visual showing the growth of the fetus. (*Source:* Program for International Training in Health [INTRAH]. Teaching and Learning with Visual Aids. London, Macmillan, 1987)



Suitable features for poor readers:

- Realistic line drawing of entire body makes it easier to perceive changes.
- Consistent position of mother promotes faster identification of fetus.
- Clear background, no distractions.
- Matches the logic and experience of the reader.

3. Provide visual cues and interaction

Visuals attract attention and help the reader focus on what is important. Four examples will help you select ways to give emphasis: use devices to call attention to key points; use action captions; introduce color; and provide the reader with a chance to interact with the instruction.

a. Use visual devices (cues) to call attention to key points

Call attention by directing the eye where to look in the visual. This step is a remedy for the random eye movement and the lack of attention to detail discussed earlier.

There are a number of devices you can use: arrows, underlining, circling, magnifying the text, boxes, a spash of color—they all help to cue the eye where to look.

Try asking the patient to do the underlining or circling with your guidance. If you are using only a small portion of a long instruction, consider cueing that portion so that the patient can quickly access the right part.

In Figure 7-13, which one of the ways to emphasize a key point will you use?

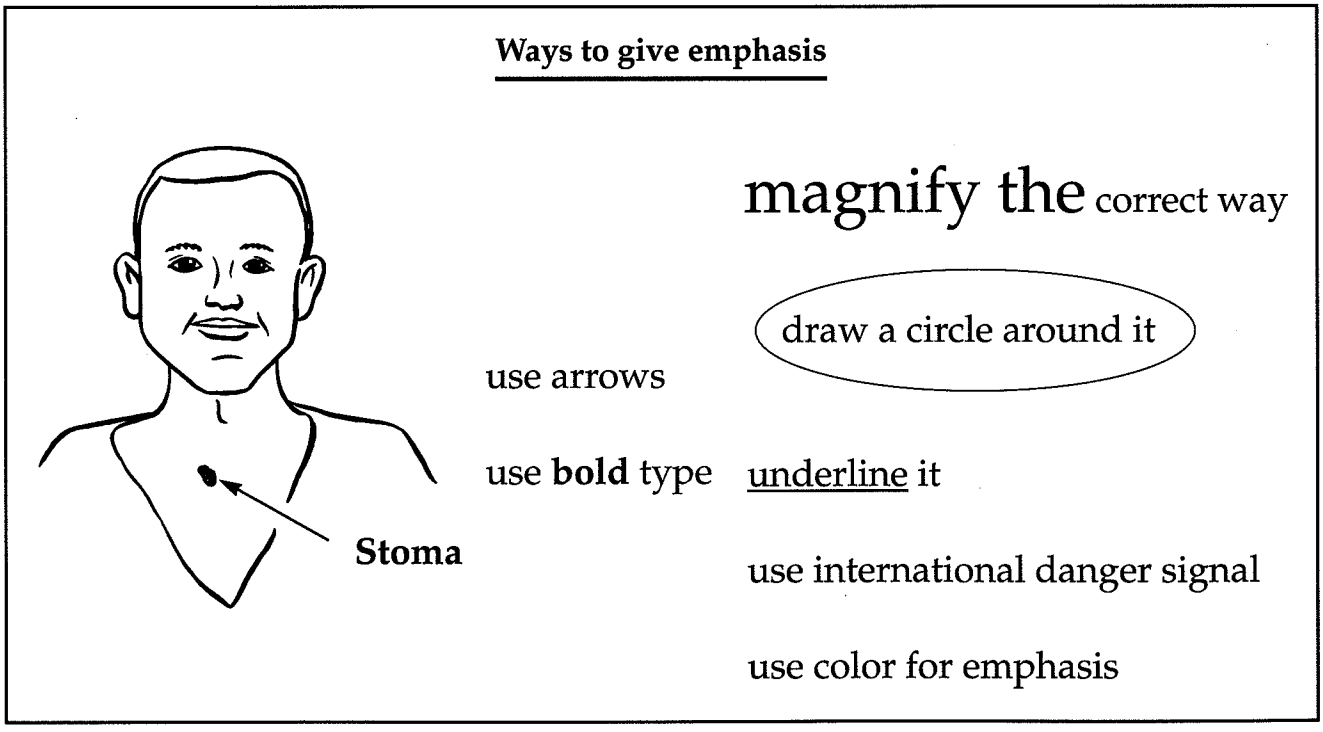


FIGURE 7-13

Devices to call attention to key points. Consider using one of these to help keep attention focused on your message.

b. Use action captions for emphasis

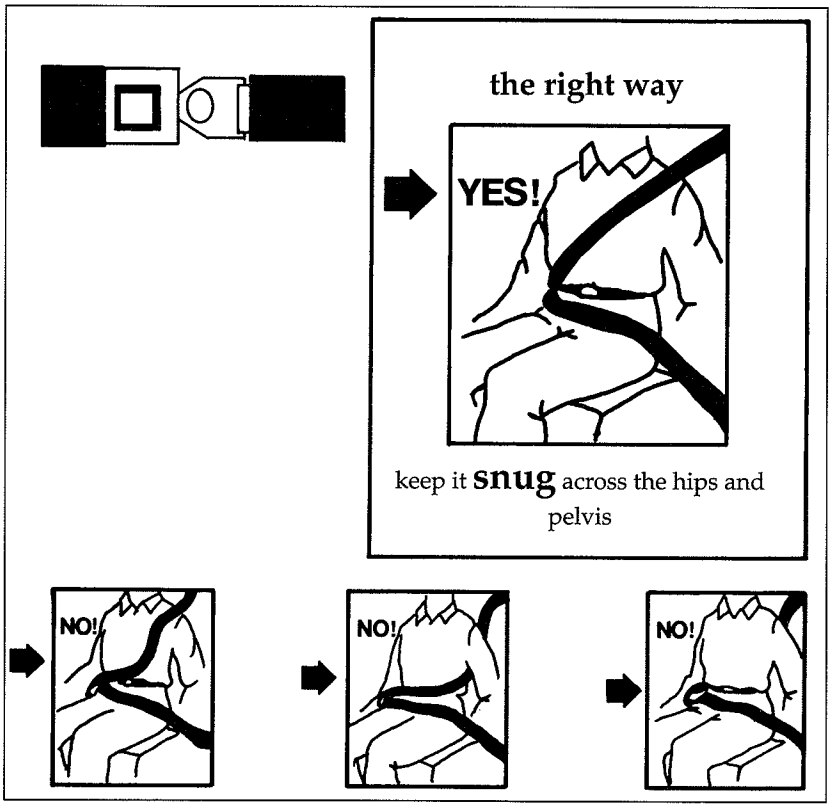
Because they are short and look easy to read, captions are often read before the text. Together with the visual, that may be all that a reader looks at on a page. So write captions that help people remember the key points. Captions are effective when they do one of the following:

- Tell what to look at in the visual
- Point out what is significant, new, different
- Point out what the implications are

In Figure 7-14 the message is *do not change the positioning of the seat belt after it is fastened.* The action captions beneath each of the four illustrations explain why it is important to keep the seat belt positioned properly. Ordinarily we suggest showing only the right way so as to avoid confusion. But when you are changing a familiar habit, such as the way you wear your seat belt, you need to help the reader remember why it is wrong to change the positioning of the belt. Readers will stay interested in captions for as long as three lines of about 15 words per line.[20]

FIGURE 7-14

Action captions as part of each picture. Arrows and magnification are used to draw attention to the snug fit of the seat belt. (*Source:* Consumer Information Department of Transportation, NHTSA, November 1992)



Suitable features for poor readers:

- Text gives reinforcement.
- Arrows call attention to "Yes" and "No."
- For emphasis the right way is magnified.

c. Use color for emphasis

Color is compelling in its ability to attract and hold attention and is therefore a very appropriate way to give emphasis to key points.

Use color to highlight and for a number of other reasons, such as to differentiate, to add clarity, to help focus the eye, and to be realistic. For example, in a visual of a catheter kit, one color could be used to identify which parts must be kept sterile. When the instruction is in black and white and you wish to call attention to one key message, use a fluorescent marker. Keep color in balance with the whole instruction so that it does not become a distraction.

Age, gender, and ethnic preferences for color vary markedly. Test your choices of color with a sample of the intended audience. Pettersson brings out how people in different cultures and socioeconomic groups use colors in different ways and with different meanings.[21]

The colors at the center of the visible light spectrum—white, yellow, and green—are the most visible. Note that road signs are often black on yellow—the colors with the most visible contrast. The least visible colors are red, blue, and violet.

d. Use interaction to give emphasis to key points

Visuals that ask the reader to respond by doing something give emphasis by implanting the message in the memory. Several ways are listed below to illustrate how you can build interaction into your instruction by having the patient do something. Place a check mark by one or more that you think you might use:

___ Have patients place an "X" through pictures of high-fat foods to differentiate from low-fat foods.
___ Have patients check off on a diet list the foods they'll buy.
___ Have patients mark a calendar to keep track of pills or medication.
___ Show patients where to underline the key points in the pamphlet.
___ Show a picture that asks patients a direct question: "What/how/when are *you* going to do . . ."?

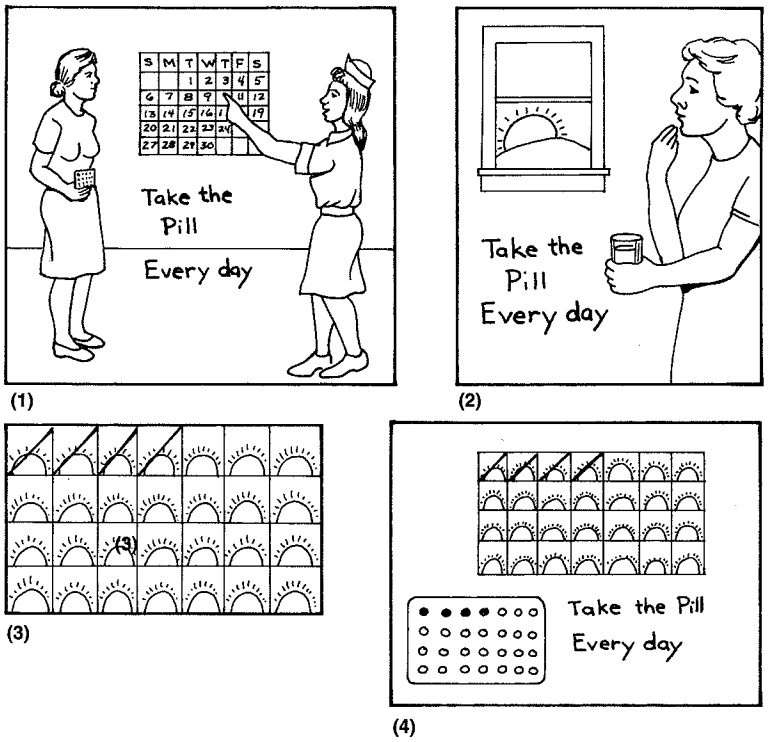
When you have decided what you are going to use for interaction, get feedback from the intended audience on their opinions of it. Use a focus group or individual interviews. Figure 7-15 was presented to a focus group for their reactions. It shows four different ways of reminding women to take their birth control pills. The first two examples use a didactic approach. The third example uses one interaction, while the fourth uses two interactions.

4. Use visuals to provide motivation

The following four ways of using visuals to provide motivation are especially useful for poor readers: use visuals for the cover; use visuals in a comic book style or a photo novella; use testamonials; try a visual or graphic type of game.

FIGURE 7-15

The focus group selected the fourth example as the most suitable (shows calendar and pill box with two interactions). (*Source:* Program for International Training in Health [INTRAH]. Teaching and Learning with Visual Aids. London, Macmillan, p. 119, 1987)



Special features for poor readers:

- Patient interacts by marking on calender pill taken each day (3).
- Patient marks calender as in (3) and also marks in pill box the pills taken each day (4).

a. Use a visual on the cover to motivate the reader

The cover is the face of your material; it must be appealing while providing a good idea of the subject. Because reading is not easy for poor readers, they need more of a nudge to get them to open the page. The cover has to deliver that nudge.

The cover should tell the purpose at a glance, and it sets the tone and mood for the instruction. It needs to attract and hold attention long enough to get the reader into the material.

The style of artwork should lead to the readers' recognition and identification with the subject. Sketches of friendly people or realistic line drawings with blank backgrounds are easily recognized. Abstract or stylized graphics lack realism and are not likely to be seen as relevant by poor readers. Photographs are an attractive medium, but most of them include too much unneeded detail. Details tend to distract poor readers and they may never "see" your message. Simple line drawings work better. Keep them basic and uncluttered.

Figures 7-16, 7-17, and 7-18 are covers from three pamphlets, all dealing with the same subject of eating habits/weight loss. As you look at each one, consider the points made in this section about covers. Check which you think would be most suitable for poor readers. The authors' answers are provided.

Which Covers Are Most Suitable for Poor Readers?

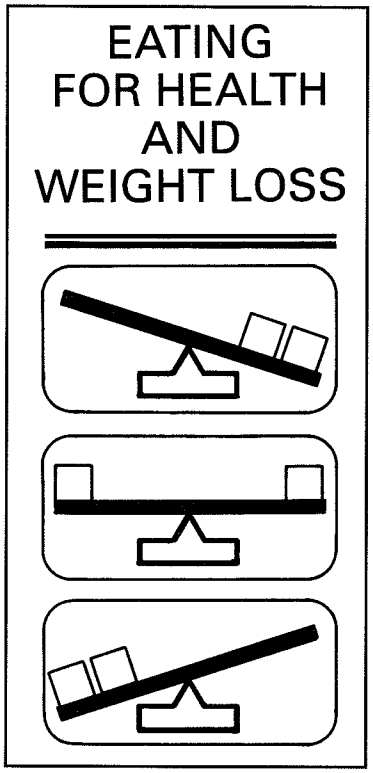


FIGURE 7-16

(*Source:* Bob Palaski Assoc., Silver Spring, MD)

Suitable

____ yes ____ no

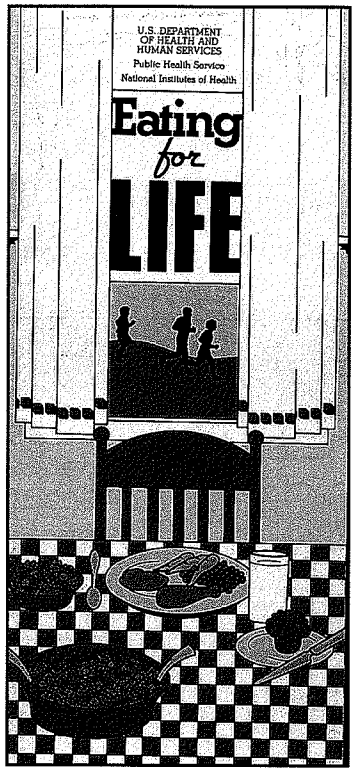


FIGURE 7-17

(*Source:* National Cancer Institite, National Heart Lung & Blood Institute, NIH Pub. 88-3000)

Suitable

____ yes ____ no

FIGURE 7-18

(*Source:* Health Literacy Project, Health Promotion Council of Southeastern Pennsylvania, Inc., Philadelphia, PA)

Suitable

____ yes ____ no

ANSWER TO COVER QUIZ

Fig. 7-16: No. Abstract symbols are hard to interpret.
Fig. 7-17: No. Unclear purpose and too many distractions.
Fig. 7-18: Yes. Communicates purpose immediately.

b. Use visuals to tell a story

Why are comic books so popular? They are visual! As brought out by Migdol (1961), comic books lend themselves naturally to five measures of effective communications: easy readability, flow, crispness, clarity, and color.[22]

There are two important reasons to use a picture/story for health education purposes: (1) people remember stories better than a set of facts; (2) using familiar characters in a familiar setting can help people talk about the real problems in their own lives and community. Following are some examples:

1. A local legend for Native Americans, "Old Man Coyote and Turtle Woman" is used in a modified comic book format about fetal alcohol syndrome for pregnant women.[23]
2. A series of comic booklets model the way a mother could talk to her son about AIDS.[24]
3. A modified comic book is the central feature of a series of learning aids to motivate pregnant teenagers to eat healthy foods.[25]
4. The photo novella concept (photographs used in a comic book format) is being used more widely for empowerment.[26] Although used widely with Hispanic populations, some Hispanic populations are not familiar with it. Test the concept before using it. Figure 7-19 attracts your attention with its scenes and leads the reader into the message quickly.

c. Use visuals for testamonials

Visuals give realism to testamonials. You actually see the people talking. And testamonials are an effective way to build self-efficacy. They build upon the inference, "If your friends and people like you can do it, you can do it too." Testamonials may have greater influence than previously realized. A survey of mothers in the WIC program revealed that they preferred and trusted other mothers as the most reliable source of nutrition and health information.[27]

Testamonials are effective for people of all ages. An illustrative example is shown in an educational student magazine and a videotape on drug abuse

FIGURE 7-19

Health tips for adolescence are interwoven in the story of two sisters. (*Source:* A Time for Change. National Cancer Institute, NIH Pub. 88-2466)

Suitable for poor readers for these reasons:

- Realism through visuals.
- Captures and holds attention.
- Health message is woven into relevant life situations.
- Easy-to-read language and short conversational sentences.

written and produced by sixty 8th graders (Figure 7-20). Furthermore, the testimonial format, multi-color, multi-sized print fits their culture and communication style. This student developed article, *If You Change Your Mind,* resonates like rock music.

c. Use graphics in a game format to motivate patients

Information learned in a game format that uses life experiences appears to be better remembered than traditional text. Graphics and visuals add realism to games that present concrete actions and relevant events. That is why they are likely to be remembered longer.[28] They also demand interaction and sharing in a social context. Games create a relaxed mood for learning.

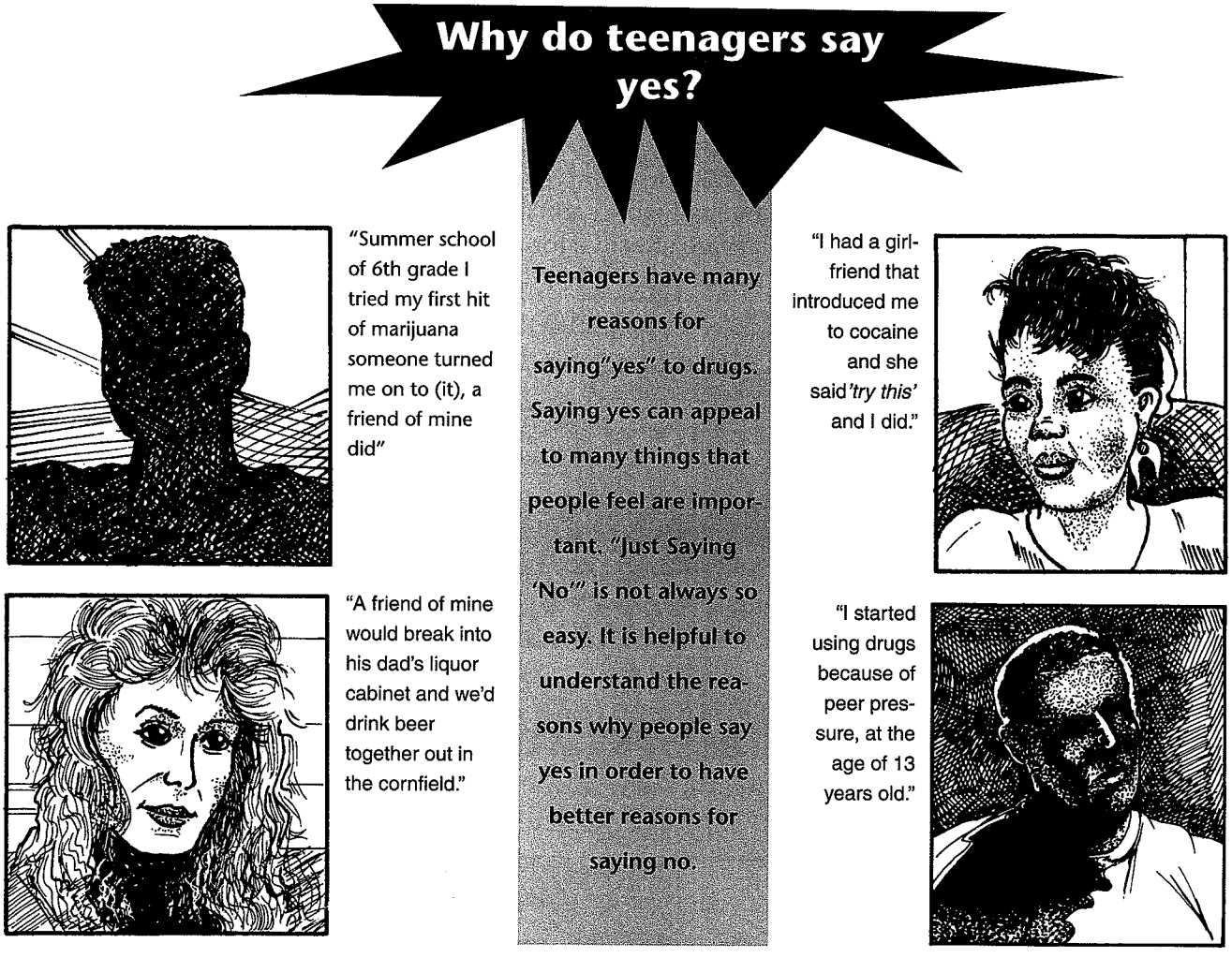


FIGURE 7-20

Effective drug abuse message for 8th graders. One of 16 pages that uses testamonials to appeal to teenagers not to use drugs. (*Source:* If You Change Your Mind. National Institute on Drug Abuse, NIH Pub. 93-3474, 1993)

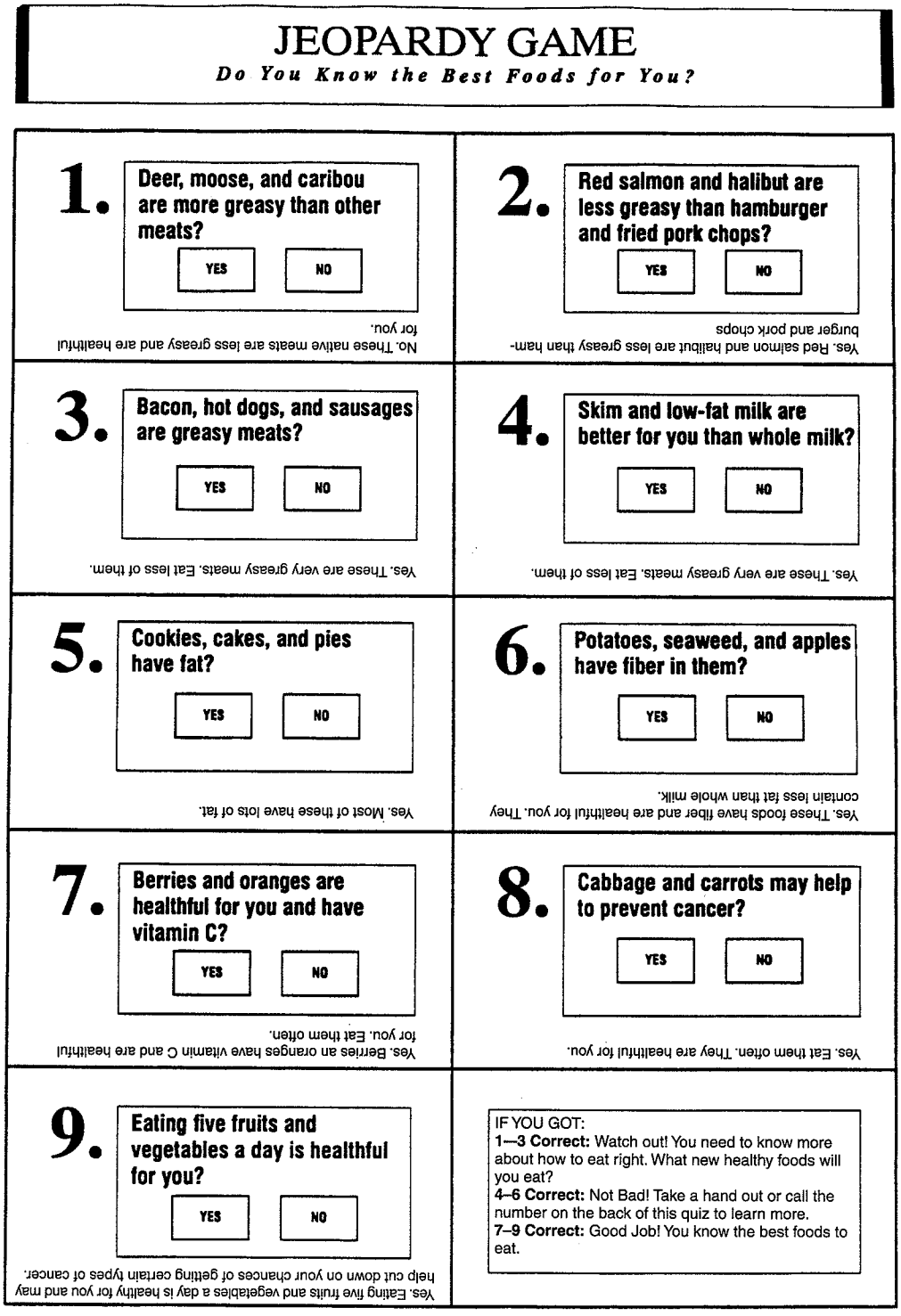
Suitable for poor readers for these reasons:

- Faces give emphasis to message.
- High emotional impact.
- Creditability is apparent.
- Matches logic and experience of readers.

Figure 7-21 is designed for an exhibit at health fairs to stimulate interest among Alaska Natives in eating healthier foods to prevent cancer. When tested with young adults, the question-and-answer game format received their enthusiastic approval.

FIGURE 7-21

Handouts and tip sheets on nutrition are used with the game format. (*Source:* National Cancer Institute, Branch of Special Populations, 1993)



Suitable for poor readers for these reasons:

- Interaction with "yes" and "no" boxes (flaps are lifted up and information about cancer risk is underneath the flap).
- Game format is familiar and liked by intended audience.
- Short questions using familiar terms.
- Scoring gives reward/advice.

A note of caution: Select games that are popular with the intended audience and that require only one or two actions by the players. Combine other media such as handouts or pamphlets as take-home materials. Be sure to give explicit instructions on how to play the game. If scoring is a part of the game, keep it simple. Relate the interpretation of the score to the need for further information or advice. Test the concept and the draft of the game with the intended audience before using it. When games are used as exhibits they stimulate interest.

In conclusion, consider how you can achieve these outcomes:

___ Concentrate on main message.
___ Reduce the amount of reading in text.
___ Provide visual cues and interaction.
___ Provide motivation.

Part 3: Making Lists Understandable

Lists, graphs, and other stylized displays of information are widely used in the health field. Some are easy to understand and personalized; they build on patients' existing knowledge and use interaction. Other kinds of lists are hard to understand; they require the patient to match columns, integrate new information, and have complex displays, making it hard to access the information. Few lists contain directions on how to read them. Part 3 discusses both the easy- and the hard-to-understand lists.

Practical design and layout features can make access to information quick and satisfying to the patient. What are the more important design and layout features? The key design and layout features for easy understanding of lists are:

1. One central purpose
2. Directions on how to read them
3. Information limited to a specific objective
4. Easily recognized way to proceed in locating information
5. Patient interaction with the information presented
6. Familiar information that ties to existing knowledge

Four examples of how to make lists understandable

Each example illustrates four or more of the features listed above. Each example serves a different purpose, so the layout changes to suit the purpose of the list.

Example 1: The central purpose in this list, Figure 7-22, is to find out if you have gum disease. The directions tell you what to do and the language is easy to understand. It's short, and when you finish you know what to do. You also know what your risks are if you don't take action.

Example 2: Lists can help the person know what specific behaviors to change by reading them at a glance. Figure 7-23 and Figure 7-24 are diabetic

FIGURE 7-22

Interactive list—good example. Suitable for poor readers for these reasons:

- Directions clearly tell that **any** symptoms require action.
- Only six items are displayed,
- Patient interacts with information.

(*Source:* Keep Your Teeth for Life. Maine Department of Health Services, Division of Dental Health, Maine AHEC System, Augusta, ME 04333)

Do You Have Gum Disease?

Anyone can get gum disease and not know it.
Gum disease is often painless.

Check to see if you have any of these:

- ❑ 1. Red, puffy gums that bleed when you brush your teeth
- ❑ 2. Gums pulled away from your teeth.
- ❑ 3. Pus between your teeth and gums.
- ❑ 4. Bad breath.
- ❑ 5. Loose teeth.
- ❑ 6. A change in how your partial denture fits.

If you checked *any* of the boxes above, you may have gum disease. See a dentist to find out. If it isn't treated, it often gets worse. Teeth

diet lists that provide immediate feedback to the patient based on that patient's diet history.[29] Called "Steps to Better Health," these figures use the outline of footprints for display of information.

As the dietitian takes the diet history from the patient, she writes the *most critical changes* that the patient needs to make inside the "Steps" outline. After counseling the patient is given the "Steps" to take home. Patients put the information on the refrigerator for daily reference. Experience with four years of using the "Steps" shows that the patients do use them. They return to the clinic with the "Steps" in hand for an update. It is a list that they have had a part in constructing.

Example 3: Lists are one of the early forms used in teaching people to read and write, so the concept of simple lists tends to be familiar to poor readers. The function of lists as we generally use them is to *do everything* on the list, such as shopping lists—"things to do." This same type of list works in health care instructions.

Figure 7-25 is an example of a list where the person follows the directions as given in the list. Information is limited to a few steps organized by when to do them. A key point is that the patient is told when to stop one procedure and begin a new one.

Example 4: The last example of lists suitable for poor readers are those that provide new information in the context of what people already know. This approach has two positive features:

1. It is quickly to understood because it contains familiar information.
2. It builds self-efficacy by acknowledging that people already know quite a bit.

FIGURE 7-23

Diet list blank form. Steps before the clinic visit. (*Source:* Janet Weiner, Metro Health, Maternity and Infant Care Program, 3104 W. 25th St., Cleveland, OH 44109)

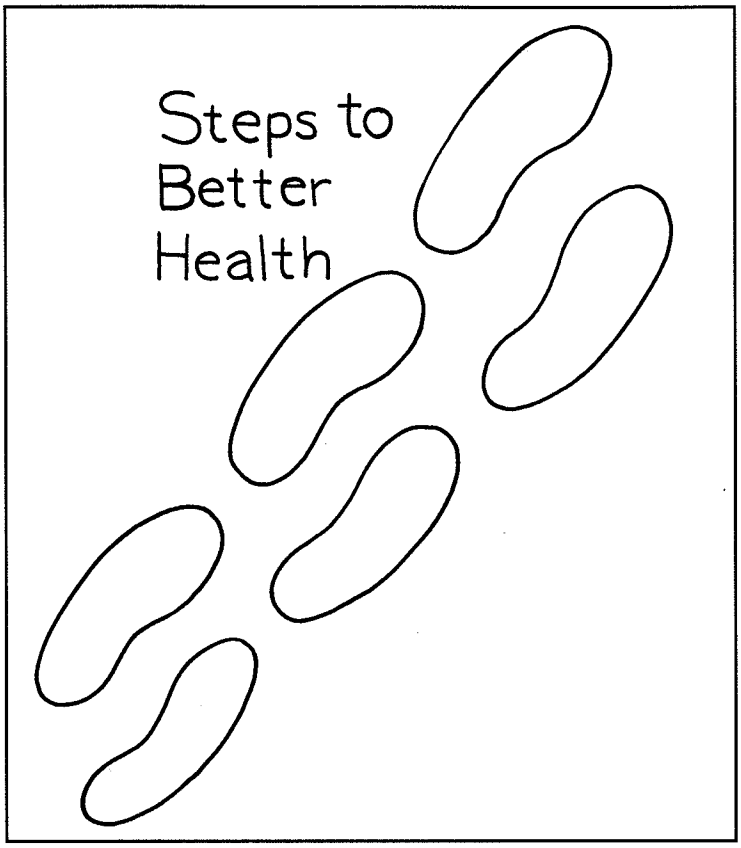


FIGURE 7-24

Diet list personalized with an example of the changes a patient needs to make. (*Source:* Janet Weiner, Metro Health, Maternity and Infant Care Program, 3104 W. 25th St., Cleveland, OH 44109)

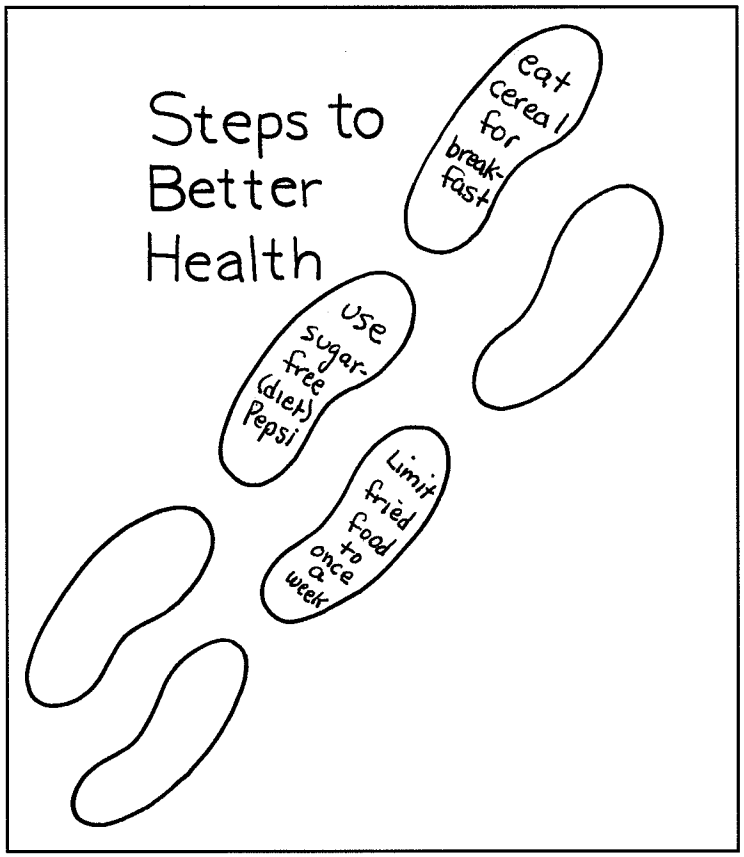


FIGURE 7-25

Effective instruction for treatment of sprain injury. Suitable for poor readers.

When you have an arm or ankle sprain, do this:

For the first 3 to 5 days

1. Keep the arm or ankle raised above the level of your heart.
2. Do not use the sprained ankle or arm:

   Ankle—use crutches, don't put your weight on it.
   Arm—use the sling and the splint at all times.

For the first day and a half: Apply ice to the sprain for 30 minutes every 2 hours.

After the day and a half: Stop the ice. Apply heat for 15 minutes four times a day.

After 5 days if you are still having discomfort, please call me at

_____. My name is

_____

Continued pain may mean you need further treatment and evaluation.

Do not use the injured arm or ankle as long as it is painful.

FIGURE 7-26

Effective list to create awareness of foods that have fat. It builds on what people already know. (*Source:* Why All the Talk About Fat? Native American Group. National Cancer Institute, Branch of Special Populations, 1992 draft)

Fat Foods

You probably know that these foods have a lot of fat:

- Butter
- Margarine
- Shortenings
- Fat on meat
- Skin on Chicken
- Skin on Turkey

- Lard
- Mayonnaise
- Oil
- Salad Dressing
- Cookies

You may not know that these foods have a lot of fat too:

- Fry Bread
- Nuts
- Chips
- Cheese
- Whole Milk

- Gravies
- Sauces

- Ice Cream
- Cream
- Donuts
- Cakes
- Pies

- Bologna
- Hot Dogs
- Hamburgers

Figure 7-26 is a simple *standardized* list intended to teach people to identify foods that are high in fat. Like the other examples, it has one central theme and has an easily recognized way to proceed in locating information. Although there are more than 10 items displayed, they are "chunked" into two main groups, one of which "you probably already know about" and one which "you may not

know." Additionally, the foods are chunked according to the way that people think about them. Designed and tested with a Native American population, it was perceived by them to be "the best page" in a several-page booklet.

The four examples of lists suitable for poor readers have several points in common: they have a central purpose and an easily recognized way to proceed in locating information. They are easy to use and do not require extensive directions on how to access the information. They have been found useful by patients.

When do lists become hard to understand?

They become hard to understand when they display a volume of different kinds of information requiring the reader to perform a series of tasks to obtain the information. Usually they do not give explanations of where to start and how to proceed in reading the list. These lists reinforce "What's the use? I can't do it" attitudes.

What can you do if you have a complicated list? Try to simplify the list by breaking it into several bite-size pieces such as in the previous four examples. If that isn't feasible, then write step-by-step directions on how to use the instruction, where to start, and how to proceed. This is easier to say than it is to carry out because of our own familiarity with the subject and the detailed process being asked of the readers. The following information is intended to help you get started in writing directions.

How to write directions

First: "Walk through" all of the explanations and steps that need to be taken to understand and use the list. Unless the purpose is *explicitly* stated on or near the list, you may have to write in the purpose. The purpose should be stated in terms of the *patients' use* or the problem that the list can help the patients solve.

Next: Write the first step. Tell where the patients enter the list. Do the patients always enter it at that point? Or is it only an intermediate step?

Then: Proceed to explain each following step in a similar manner. If appropriate, include an example.

Finally: Explain what the patients end up with, and how they use that information.

For lists that are very simple, short, with one central function of six or less items, some of the above steps may be dispensed with. But think back to the last time you assembled some simple purchase that came unassembled in a box with assembly instructions. The author of that instruction thought it was simple!

Figure 7-27 is an example of a hard-to-understand diet list from a currently used patient instruction about sodium. No directions were included with the diet list. Figure 7-28 shows directions developed by the authors to explain how to use the diet list.

Testing directions: One way to test your directions for completeness and suitability is to ask a few patients to carry them out *exactly* as you have written them. Make notes of where they begin to hesitate and become confused. These are places that need revision or examples.

FIGURE 7-27

Diet list on sodium content of foods. Example from a currently used patient instruction about sodium. Patients need help understanding how to use the numbers to make correct food choices, and they need examples of what meals for one day might be like.

Sodium Content of Common Foods Diet List

How much is *too much?*

- A safe amount of sodium is 1,100–3,000 milligrams (mg) a day.
- The average American consumes 2,000–7,000 mg of sodium per day!
- Just one teaspoon of salt contains over 2,000 mg of sodium.

Sodium Content of Common Foods (mg)

MILK GROUP	MG SODIUM	PROTEIN GROUP	MG SODIUM
Ice cream, 1/2 cup	50	Dried beans/Peas cooked, 1 cup	5
Milk (whole, low-fat, skim)	125	Meat, fish, poultry (plain), 2 oz	50
Low-fat yogurt, 8 oz	175	Processed cheese, 1 oz	400
Natural cheese, 1 oz.	175	Peanut butter, 4 Tbsp	320
Eggs, 2 large	120	Instant pudding, 1/2 cup	470
Cottage cheese, 1/2 cup	460	Dried beans/peas canned, 1 cup	850
Luncheon meat, 2 oz	450	Hotdog, 2	1,257
GRAIN GROUP		**FRUIT AND VEGETABLE GROUP**	
Pasta, rice, cereal, 1/2 cup (cooked without salt)	5	Fresh, canned, or frozen Fruits & juice, 1/2 cup	2
Bread, 1 slice	120	Fresh, frozen vegetables (plain) 1/2 cup	5
English muffin	150	Canned vegetables, 1/2 cup	200
Cereal (dry) 3/4 cup	200	Tomato or vegetable juice 1/2 cup	400
		Sauerkraut, 1/2 cup	750
		Pickle, 1 large	1,400
OTHER FOOD GROUP			
Gingerale, 12 oz	20	Cookies, 2	100
Tonic water, 12 oz	20	Salad dressing, 1 Tbsp.	150
Cola (regular)	25	Catsup, 1 Tbsp	156
Cola (diet), 12 oz	30	Apple pie (1/8)	200
Butter, 1 tsp	40	Corn chips, 1 oz	230
Margarine, 1 tsp	50	Danish, 1	250
Bouillon cube	420	Bacon, 2 slices	275
Soup (canned) 1 cup	1,000	Soy sauce 1 tsp	343
		Baking soda, 1 tsp	821

FIGURE 7-28

Directions for understanding how to use the sodium list, Figure 7-27. (*Source:* C. Doak, L. Doak, J. Root)

DIRECTIONS: How to use this list to keep your sodium down

Purpose of the list: You need to cut down on sodium. Consider cutting down to a teaspoon of salt, a goal of 2,000 mg a day. An easy way to do this is to eat foods low in sodium.and go easy on foods high in sodium. This list will help you do that by telling you how much sodium you are getting when you eat certain foods. Try to skip foods with the large sodium amounts—the large numbers. Big numbers are bad for you.

What is on the list: It shows the names of meats, fruits and vegetables, breads, milk, and other foods that you eat a lot. After each food is a number that tells you how much sodium is in one serving of that food. The measurements for the amount of foods may be different. Sometimes the serving is for a cup (c), a tablespoon (Tbsp), a teaspoon (tsp), or an ounce (oz).

Where should I begin? Start up at the top on the left where it says Milk Group. Read through the whole page, all the lists. Then think about which of these foods you eat a lot. Each food has a different amount of sodium. That's the number to the right of the food.

Then what do I do? Go back to the Milk Group heading.

Step 1. Go through the whole list again, but this time *put a line under the foods you want to eat* for breakfast, lunch, supper, or snacks.

Step 2. Now look at the numbers on the right side of each of these foods you underlined. *Make a list of these numbers.*

Step 3. *Add the numbers on your list.* If your total is more than 2,000, you'd get too much sodium. If your total is less than 2,000, you are doing okay. Go back to the list and change some of your foods so that you end up with a total of 2,000 or less for everything you eat or drink each day.

More about what makes lists hard to understand: Figure 7-27 requires the person to concentrate on just one subject, the sodium content of foods. Lists that require the person to concentrate on as many subjects simultaneously have a task demand far beyond the skills of poor readers. Even the skills of many good readers can be taxed.

For illustrative purposes the authors present two lists containing information that require the reader to perform similar complex tasks. The first one, reading a bus schedule (Figure 7-29), is a test question from the National Literacy Survey. This is considered a difficult question; it is at level 4 on a scale of 1 to 5 (see Chapter 1). Only 18 percent of adult Americans could do this task correctly.

ROUTE **5**

VISTA GRANDE

This bus line operates Monday through Saturday providing *"local"* service to most neighborhoods in the northeast section

Buses run thirty minutes apart during the morning and afternoon rush hours Monday through Friday

Buses run one hour apart at all other times of day and Saturday

No Sunday, holiday or night service.

OUTBOUND
from Terminal

	Leave Downtown Terminal	Leave Hancock and Buena Ventura	Leave Citadel	Leave Rustic Hills	Leave North Carefree and Oro Blanco	Arrive Flintridge and Academy
AM	6:20	6:35	6:45	6:50	7:03	7:15
	6:50	**7:05**	**7:15**	**7:20**	**7:33**	**7:45**
	7:20	7:35	7:45	7:50	8:03	8:15
	7:50	**8:05**	**8:15**	**8:20**	**8:33**	**8:45**
	8:20	8:35	8:45	8:50	9:03	9:15
	8:50	**9:05**	**9:15**	**9:20**	**9:33**	**9:45**
	9:20	9:35	9:45	9:50	10:03	10:15
	10:20	10:35	10:45	10:50	11:03	11:15
	11:20	11:35	11:45	11:50	12:03	12:15
PM	12:20	12:35	12:45	12:50	1:03	1:15
	1:20	1:35	1:45	1:50	2:03	2:15
	2:20	2:35	2:45	2:50	3:03	3:15
	2:50	**3:05**	**3:15**	**3:20**	**3:33**	**3:45**
	3:20	3:35	3:45	3:50	4:03	4:15
	3:50	**4:05**	**4:15**	**4:20**	**4:33**	**4:45**
	4:20	4:35	4:45	4:50	5:03	5:15
	4:50	**5:05**	**5:15**	**5:20**	**5:33**	**5:45**
	5:20	5:35	5:45	5:50	6:03	6:15
	5:50	**6:05**	**6:15**	**6:20**	**6:33**	**6:45**
	6:20	6:35	6:45	6:50	7:03	7:15

INBOUND
toward Terminal

Leave Flintridge and Academy	Leave North Carefree and Oro Blanco	Leave Rustic Hills	Leave Citadel	Leave Hancock and Buena Ventura	Arrive Downtown Terminal
6:15	6:27	6:42	6:47	6:57	7:15
6:45	**6:57**	**7:12**	**7:17**	**7:27**	**7:45** Monday through Friday only
7:15	7:27	7:42	7:47	7:57	8:15
7:45	**7:57**	**8:12**	**8:17**	**8:27**	**8:45** Monday through Friday only
8:15	8:27	8:42	8:47	8:57	9:15
8:45	**8:57**	**9:12**	**9:17**	**9:27**	**9:45** Monday through Friday only
9:15	9:27	9:42	9:47	9:57	10:15
9:45	**9:57**	**10:12**	**10:17**	**10:27**	**10:45** Monday through Friday only
10:15	10:27	10:42	10:47	10:57	11:15
11:15	11:27	11:42	11:47	11:57	12:15
12:15	12:27	12:42 p.m.	12:47 p.m.	12:57 p.m.	1:15 p.m.
1:15	1:27	1:42	1:47	1:57	2:15
2:15	2:27	2:42	2:47	2:57	3:15
3:15	3:27	3:42	3:47	3:57	4:15
3:45	**3:57**	**4:12**	**4:17**	**4:27**	**4:45** Monday through Friday only
4:15	4:27	4:42	4:47	4:57	5:15
4:45	**4:57**	**5:12**	**5:17**	**5:27**	**5:45** Monday through Friday only
5:15	5:27	5:42	5:47	5:57	6:15
5:45	**5:57**	**6:12**	**6:17**	**6:27**	**6:45** Monday through Friday only

You can transfer from this bus to another headed anywhere else in the city bus system.

Monday through Friday only

To be sure of a smooth transfer tell the driver of this bus the name of the second bus you need

On Saturday afternoon, if you miss the 2:35 bus leaving Hancock and Buena Ventura going to Flintridge and Academy, how long will you have to wait for the next bus?

A Until 2:57 p.m.

B Until 3:05 p.m.

C Until 3:35 p.m.

D Until 3:57 p.m.

E I don't know.

FIGURE 7-29

Test question used on National Literacy Survey. (*Source:* Adult Literacy in America, National Center for Literacy Statistics, U.S. Department of Education, 1993)

The second illustration is a diabetic diet list intended for low literacy patients. Like the bus schedule, it displays a large volume of imformation requiring matching and acculmulating facts. The patient is asked to use the booklet to select foods for three meals and three snacks each day. Figure 7-30 is one page of: "Lunch" from *Eating Healthy Foods* prepared specifically for those clients who have minimal reading skills.

Each list was evaluated using four variables related to the difficulty of using the lists:[30]

1. Multiple feature matching
2. Complex displays involving information nested within the display
3. Number of distractors
4. Conditional information that must be taken into account in order to arrive at a correct response

A comparison of the variables for the two graphics is shown in Table 7-2.

The reader must integrate information and draw a number of inferences to reach a decision in using the bus schedule as well as the diet list. These are skills that four out of five Americans have not mastered. Health instructions that use such a highly complex format make learning *how to learn* as difficult as having the medical problem.

Sometimes designers of health instructions assume that pictures in color overcome the complexity of the format and the volume of information. This

TABLE 7-2
Comparison of complexity of bus schedule with diet list

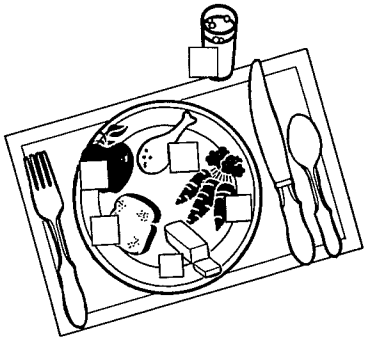
VARIABLES ASSESSED	BUS SCHEDULE	DIET LIST
1. Multiple-feature matching	Saturday afternoon Leaving Hancock and Buena Ventura Arriving at Flintridge and Academy Calculate wait time	Match food symbols on plate with food symbols on list Locate amount recommended for each serving of each food group Select number of foods from each food group on list Match with diet prescription Check with other meals for accuracy
2. Complex displays involving nested information	Columns of departure and arrival locations and of times	Columns of foods with 5–6 pictures per column Amounts change with each picture Modifers for foods (raw, cooked)
3. Number of distractors	Other destinations and terminals	Plate with food, utensils, placemat Color code (six colors) Food symbols
4. Conditional information to be taken into account for correct response	Information at top of page, in fine print, contains the critical Sat. schedule modifier	Exchange one food for another within same food group using correct serving amount for each food Cook foods using patient's correct fat allowance

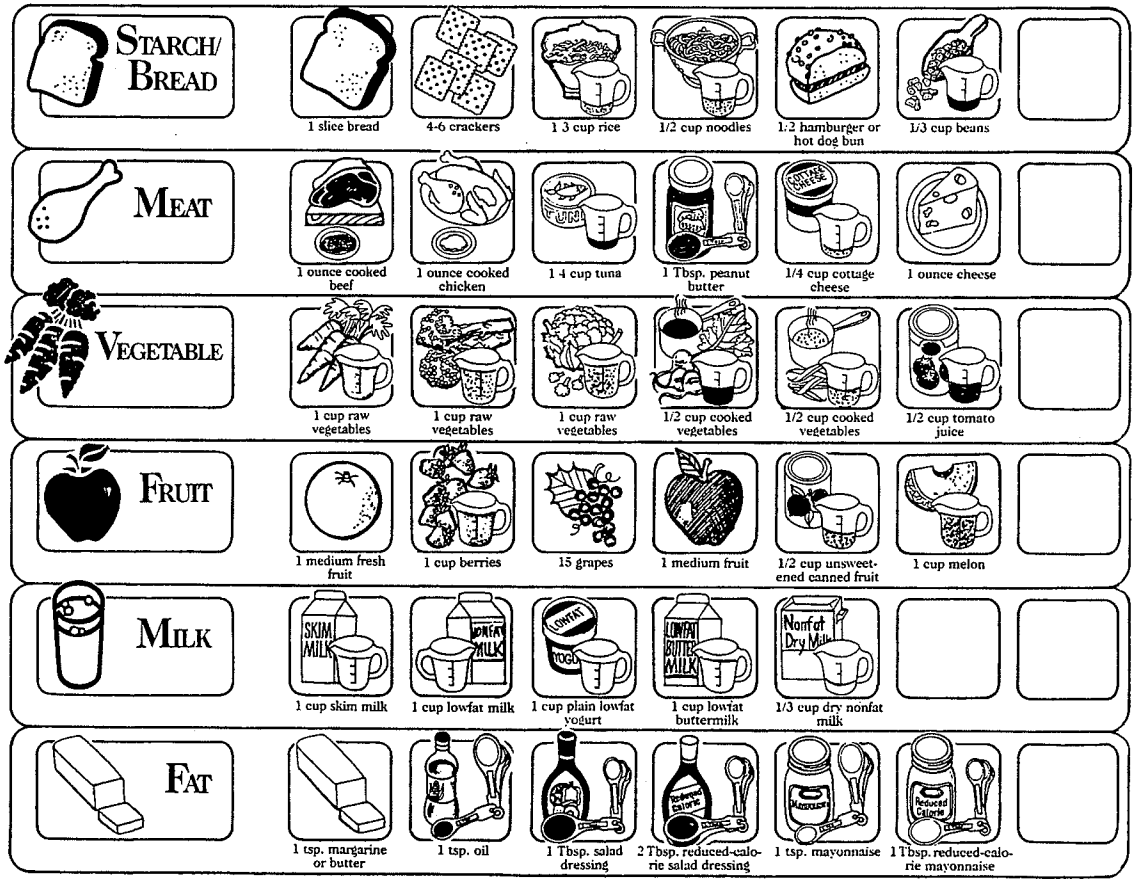
Task: What can I eat for lunch? Use the numbers that the dietitian has written into the squares on each of the 6 food symbols on the plate to determine how many servings I should have from each food group. Then use the Food Groups to select the foods for lunch.

LUNCH

□□:□□

Lunch for a __ calorie diet:





You can also choose some free foods:

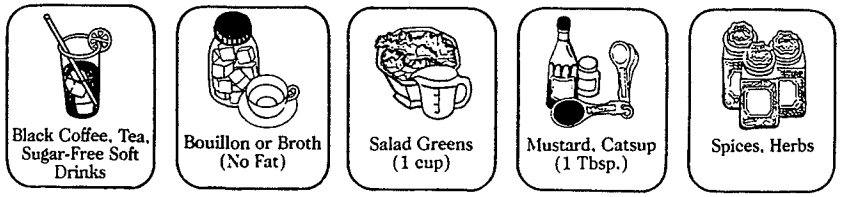


FIGURE 7-30

Diet list for low literacy patients. (*Source:* Eating Healthy Foods: A Guide to Good Eating [1988]: American Diabetes Association Inc. American Dietetic Association, Alexandria, VA.)

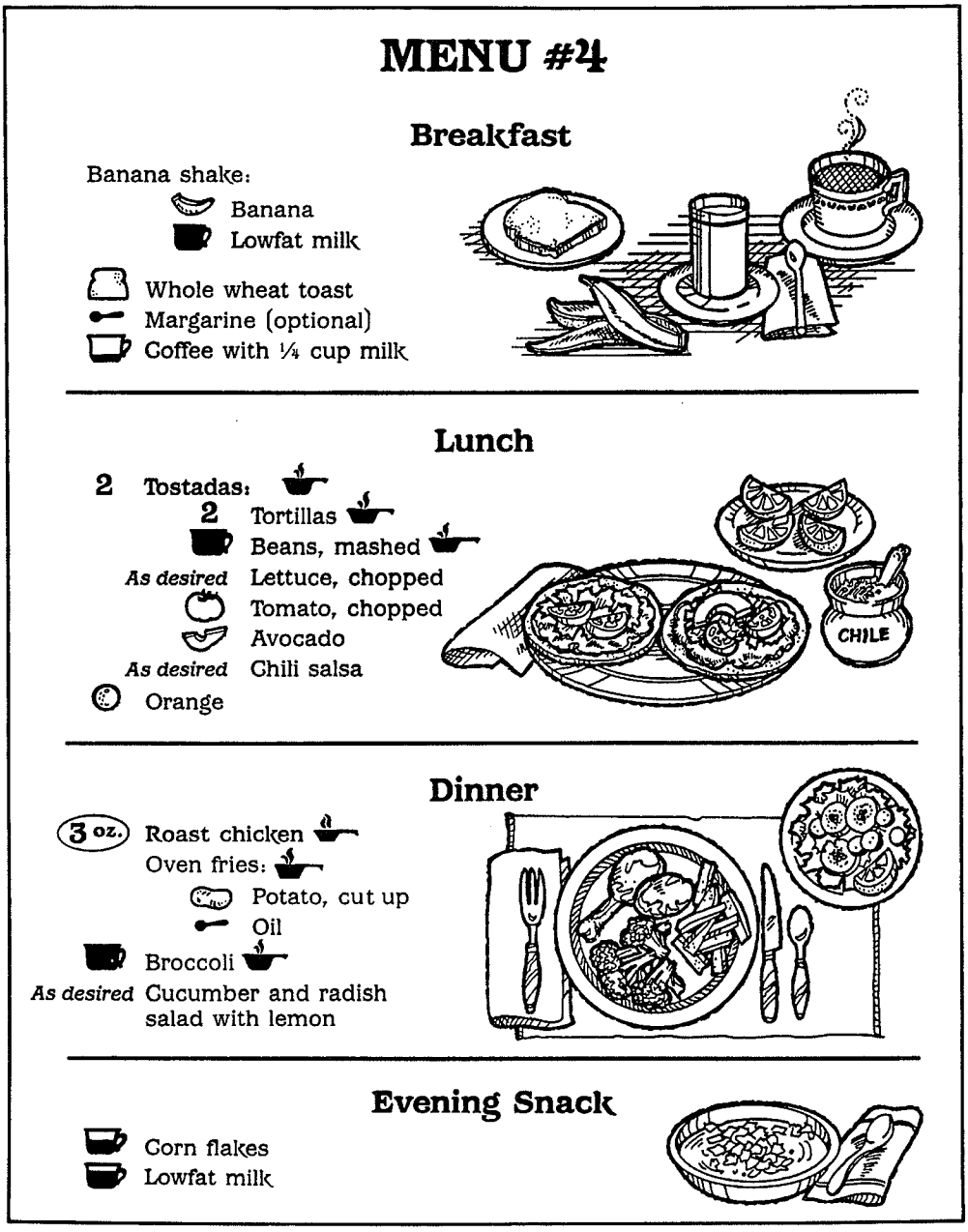
is a false assumption. Pictures in color attract attention, but the reader still has to have the skills to work with the variables assessed in Table 7-2.

What are more effective ways of teaching a number of complex concepts? Several chapters in the book deal with this subject as well as Part 2 of this chapter. One solution is to partition the information into several smaller and simpler displays as the *unit* of information. It is important to use a format that the patient is familiar with so that he doesn't have to learn the format as well as the information it contains with the variables assessed in Table 7-2.

For example, Figure 7-31 is one sheet in a series that the diabetic patient can use for planning his meals. The intent is to communicate the information

FIGURE 7-31

One-day meal plan for a diabetic Hispanic client. Suitable for low literacy patients. (*Source:* California Diabetes Program, CA Department of Health, Sacramento, CA)



in units of *one day at a time.* Included with the series is a *key sheet* that explains the symbols and how to use the sheets.

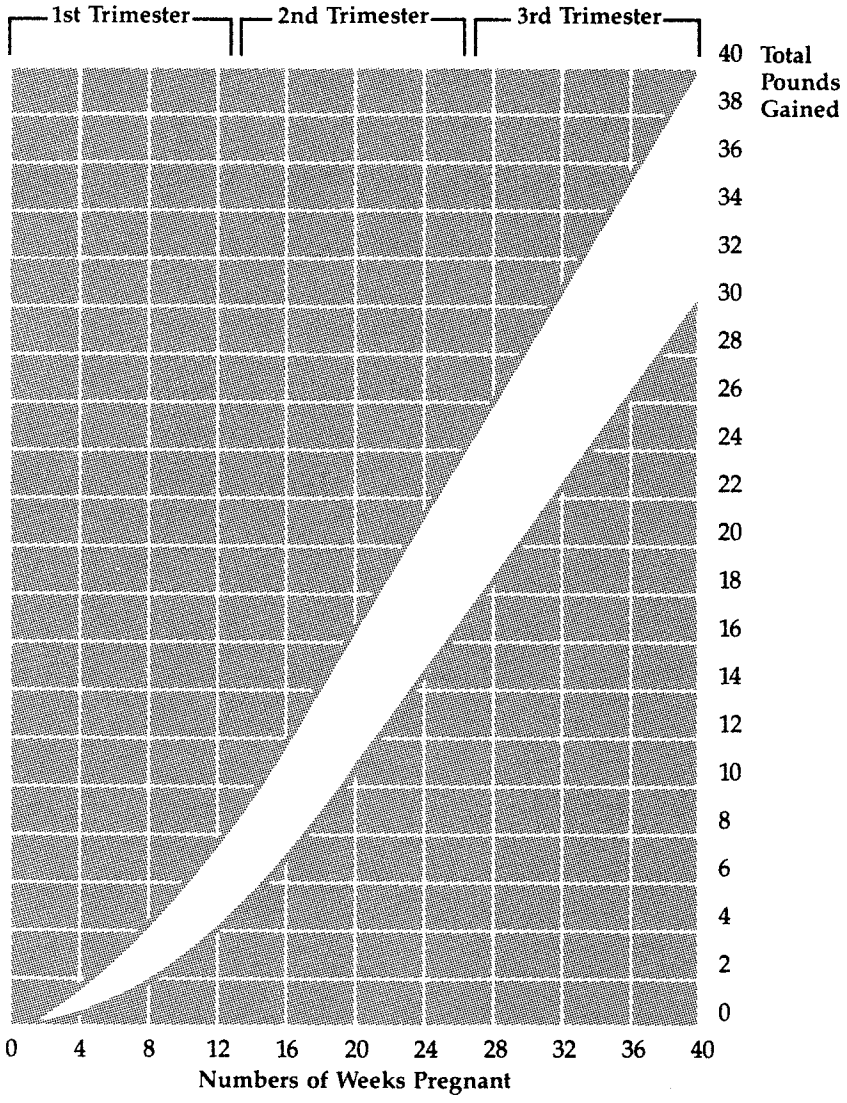
"How-to-use-it" directions are almost always needed regardless of the format of the list or chart. Poor readers need to have each step explained. Figure 7-28 is a good illustration of the amount of detail needed in the directions.

Graphs are another source of problems for poor readers

Graphs are often used to plot weight gain in pregnancy as well as for other purposes. Because graphs are abstract, require matching different kinds of information, and are not perceived as real, they do not communicate well to poor readers. Figure 7-32 compares the patient's weight gain over time with the ideal weight gain. First the patient determines her current weight gain by subtracting her previous weight from her current weight. Originally, the next

FIGURE 7-32

A graph of weight gain during pregnancy that compares your weight gain with the ideal. (*Source:* Healthy Foods, Healthy Baby. Philadelphia Health Department, 1990)



step called for the patient to plot her weight gain on the graph. This step turned out to be too difficult for pregnant teenagers even after the graph and the steps were explained.

Two changes were made: the nurse or nutritionist now records the patient's weight gain on the graph instead of the patient; and the graph itself was changed to show a wide line through it representing the right range of weight gain. Staff have found the graph useful in counseling to dramatize the weight gain for patients who need special attention.[31]

The problem is that many people, especially poor readers, do not understand the *logic* of this type of format. Interpreting a comparison from a graph requires *skills of inference* that many poor readers have not developed.

A simple list in which the patient records her monthly weight gain is suggested instead of a graph. On the page opposite the graph (Figure 7-32) contained in the booklet *Healthy Foods, Healthy Baby* a simple record of the patient's weight goal, the current date of weight, the patient's weight, and the number of weeks pregnant can be recorded by the patient (Figure 7-33 below). Experience in using this type of list shows that it is a more suitable format than having patients attempt to use the graph itself.

Summary

As a concept, lists have advantages over long paragraphs of text. Lists are preorganized, which helps to reduce the sheer volume of information. They help with quick recognition of the information should the reader skim or later

FIGURE 7-33

A simple way for the patient to record and keep track of her weight gain during pregnancy. A poster of this graphic could be placed above the scale in the clinic. (*Source:* Healthy Foods, Healthy Baby. Philadelphia Health Department 1990)

My weight gain goal is _____ pounds.

Date	My Weight	Weeks Pregnant

review the material. Many complex lists used in health care instructions are not understood, and to make matters worse, they do not contain "how to" instructions or examples. Gillespie (1993) helps professionals understand graphics with a succinct review of research.[32]

To make lists suitable for low literacy patients:

___ State the purpose explicitly.
___ Limit information to a specific objective.
___ Write detailed directions for patients' use.
___ Encourage patient interaction, or give an example of how to use the list.
___ Provide an easy way to proceed in locating information.
___ Verify your directions with a few patients.

Take your pencil and check the features you want to include in your next design of lists.

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