

8

“What kinds of instructions work best—pamphlets, audio tapes, or video?”

Teaching with Technology

This chapter is intended to excite you and involve you in the use of technology in your patient education endeavors. You are already familiar with and probably use at least some of the technologies described in the following pages. We explain the technology, its applications, and details for your use in teaching your patients.

We begin with one of the simplest teaching technologies—audiotaped instructions (Part 1)—and proceed to the use of television (Part 2), and finally to interactive multimedia (Part 3). These technologies, especially multimedia, are moving forward at a rapid pace and are increasingly used in education. They can multiply your teaching effectiveness and increase your patients' ability to learn.

Part 1: Audiotaped Instructions

Listening, rather than reading, is a more natural way to understand language. Kavanagh writes that, “Listening is easy; reading is hard.”¹ Patients have told us, “I pay attention more and don't get lost when I hear it on the tape.” In addition to the information content, word-sounds convey emotion and cultural messages that affect our willingness to learn and believe.

One-to-one oral instruction is the most common communication medium in health care, but it takes time—an increasingly scarce commodity at busy clinics. And when oral instructions are given, the research shows that patients forget most of what they have been told within minutes after leaving the clinic or doctor's office.² Audiotaped health care instructions may overcome these problems and they offer additional advantages.

Although audiotaped health instructions are becoming more common, especially for health promotion and disease prevention, many health care providers are not yet using them to teach patients. However, the authors have found that with as little as an hour of training in the development and use of audiotaped instructions, providers can produce highly effective instructions and they develop great enthusiasm for the medium. By participating in the exercises presented in the pages that follow, you will learn quickly and have a similar enthusiasm for audiotaped instructions—and so will your patients.

The rationale for this part of the chapter is to provide you with both the learning principles and the detailed “how to” guidance to enable you to make your own tapes and use them to teach patients. Objectives for Part 1 are:

- To apply the education principles discussed in Chapter 2 to making your own audiotaped instructions
- To provide details on how to make your own audiotaped instructions and use them to teach patients effectively
- To provide an understanding of audiotape and tape players

The imperative for audio

For the approximately 27 million adults in the United States who are functionally illiterate, audiotaped instructions may be one of the few ways that health care messages can be understood.³ They rarely choose print formats as a source of information; even simply written instructions may be discarded. In addition to the 27 million are another 45 million adults with marginal literacy skills.

Audiotaped instructions can reach these populations. For example, during 1990 and 1991 the public health nurses in Trinidad–Tobago found that their printed leaflets were not influencing many parents to bring their preschool children in to be immunized against measles. Many of the parents, especially those living in the hills, could not read the leaflets. So, the nurses used a school choir to make an audiotape of the immunization messages. The 30-second song was played often over local radio stations. Nearly everyone has a transistor radio, and the messages got through. Soon, children everywhere were singing a new song, “Zap! Goes the Measles” (to the tune of “Pop Goes the Weasel”) and immunizations soared. Their song:

*For if you were like nature boy
You'd never get the measles.
But if you are more normal-like
Here comes the measles.
To keep you from all harmful things
You see it is so easy;
So we will do what doctor says . . .
“Immunize” (doctor's voice)
Zap! Goes the measles!*

In the above example, the children's voices were instantly recognized and accepted by their radio listeners. Acceptability of your health care messages can be enhanced by having them recorded by those of your target culture.

A growing number of audiotaped health care messages are now in use in the United States. Many are innovative and use talk-show formats or rap songs to convey health care or prevention messages about breast self-examination, smoking cessation, and healthy weight loss.^{4,5,6} See Figure 8-1.

Learning principles for audiotaped instructions

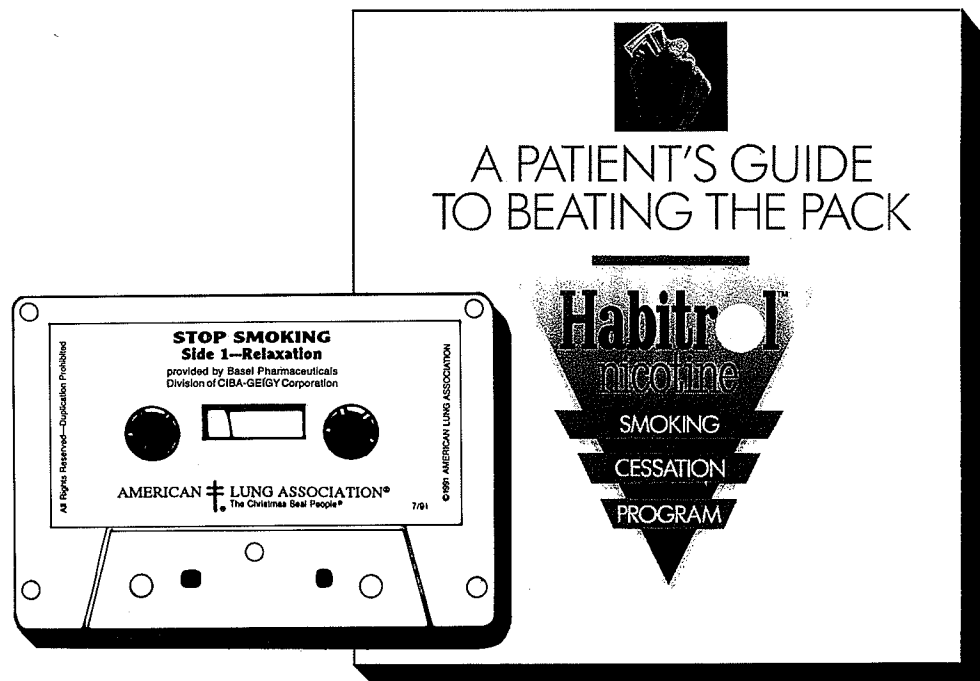
The learning theory and principles described in Chapter 2 apply to audiotapes as well as other methods of communication. To learn to apply them, the authors ask you to engage in brief exercises as we proceed. By the end of the chapter you will understand the principles for teaching with audiotapes, and will have attained skills to develop your own instructions in this medium.

Limit the objectives

This rule is especially critical for audiotapes because the attention span for listening is so limited. Tapes of one to five minutes hold attention and are more effective than longer tapes. King (1979) and others have found that even with the added stimulus of visuals (educational television), a break is needed every eight minutes if learner attention is to be maintained.⁷

FIGURE 8-1

Smoking cessation package:
audiotape and pamphlets.
(Source: Basel
Pharmaceutical and
American Lung Association)



For short taped messages, one objective is preferable (two at the most). A single objective has the virtue of leading to a smaller number of details in the content of the audiotape, which reduces the chance for information overload. Thus, the message has a better chance of being remembered.

Many currently available audiotaped instructions in the health field have too many objectives and hence are too long. The “rule of seven” (see Chapter 5) is violated and the listener soon realizes that there is no way to follow along.⁸ It’s a little like trying to drink out of a fire hose—a gulp or two may be possible, but there is no way to keep up! Besides, long tapes are nearly always dull tapes.

EXERCISE ON LIMITING OBJECTIVES

Select an over-the-counter or a prescription medication and read the label and patient package insert (PPI). (Note: If you prefer, in lieu of medication label and PPI, for this series of exercises, you can use an instruction you are developing or using with your patients.) List the possible objectives for a short audiotaped instruction for patients. You may include such objectives as how to take the medication, possible side effects, what to do if . . . , and purpose of the medication—all worthy objectives.

Next, select one or two of these objectives that are most critical in terms of patient knowledge and behavior. These objectives will be the basis for an audiotape. How will you deal with any topics you have left out? If necessary, include them in a short supplemental handout, or make a second tape.

Focus on behaviors

Since so few points can be presented during a short audiotape, focus on the key behaviors rather than facts. Increase motivation by presenting information in the sequence of the Health Belief Model⁹ (see Chapter 2).

EXERCISE ON BEHAVIORS

Make a list of the patient behaviors needed to meet the objective(s) you identified in the previous exercise. Now arrange these behavior topics in a Health Belief Model sequence (see Chapter 2 for sequence). Select only enough topics to make a tape of about three minutes.

Make it interactive

As noted in Chapter 3, interaction is a key instructional component to achieve comprehension and recall. Consider building interaction into audiotaped instructions by using (1) a dialogue format, (2) a question-answer (Q/A) format, (3) a supplemental medium such as a booklet or picture sheet to be marked in response to questions or cues on the tape.

Dialogue commands listener attention even on subjects about which listeners have little interest. Many aspects of the “overheard conversation” are inherent in dialogue and these tend to capture listeners’ attention.¹⁰ Unless there is a compelling reason not to use dialogue, it should be the first choice for tape format.

The Q/A format offers a structure to present new information and to obtain interaction and feedback. The Q/A responses may be generated by two voices on the tape: perhaps the health care provider and a client. A more direct interaction with the listener may be obtained by posing questions directly to the listener, pausing, and allowing time for the listener to respond verbally. For example:

"We've talked about several foods you should not eat. Now which of those foods will you cut from your meals?" (5-10-second pause). "If you said . . . , you are right!"

Supplemental materials such as true/false, fill in the blanks, circle the right picture, or other paper and pencil responses can provide the interaction that leads to learning. Such supplemental materials may be locally produced and consist of a single sheet of paper.

Existing pamphlets or booklets may also be used, with the client given instructions on the tape as to the page and action required. A pause must be built into the tape to allow time for the client to respond. An audiotape would be an excellent medium to "walk" a newly diagnosed diabetic patient through with directions on how to use a chart or a food exchange list.

EXERCISE TO MAKE INSTRUCTION INTERACTIVE

Continuing with the earlier exercise, develop listener interaction on the key points you've already listed. Use (1) a direct question(s) to ask on the tape; (2) ask the listener to respond to the questions in a supplementary material that is used with the audiotape.

Key points first and/or last

Stating the key point(s) last is more important than stating them first for audiotaped messages. The listener may not be paying attention at the start and may have missed the key message. But a compelling dialogue may have captured attention during the running of the tape, and the ending message will be heard.

Unlike the printed page, which can be referred to over and over again, audio instructions played over radio stations must usually be grasped at once unless the message is given a rerun. Thus, by repeating the key point(s) of your message first and last, you will better assure that listeners get the message.

EXERCISE ON WRITING THE OPENING AND CLOSING STATEMENTS

Write a short statement in narrative style that gets right to the point or purpose. This will be the opening and closing statement on your audiotape. The message need not be worded exactly the same in both places, but the idea should be the same. For example, an opening message: "I hear I can get AIDS by sharing needles. Is that true?" An ending message: "Clean your needles with bleach. It can save your life."

If you have performed each of the four exercises above, you now should have the draft of an effective health care instruction for the medication (or other topic) you have selected. You are now ready to record the message.

Recording the message

Since high fidelity is not needed for speech, you can use an inexpensive portable cassette recorder/player. Set the volume control near the high end, and hold the microphone about 16 to 24 inches (40 to 60 cm.) from the speakers' faces. Press the record control(s) and talk naturally. Be careful not to speed up your rate of speaking. After you have recorded the message, rewind and replay your message to assess how it communicates.

The dialogue should come in short, natural chunks; there should not be long paragraphs of spoken information without intervening responses. As in ordinary conversation, the responses may be very brief and consist of no more than "Oh?" or "H-mm!" "Oh, I see," or "How?" If you are not satisfied with some part of the recording, record it anew—it takes only a few minutes. A summary of the process to plan and make audiotapes is shown in Box 8-1.

In ordinary conversation we often speak in incomplete sentences; we interrupt, we respond to show we understand (or don't), and we may repeat a part of what the first speaker has just said. In your recordings, give free rein to these natural characteristics of speech. If necessary, some of these can be edited out later.

BOX 8-1

Procedure to make an audio taped instruction

1. Select a health care area or disease category as a subject. Topics such as nutrition for diabetics, smoking cessation, or hypertension are suitable.
2. Decide on an objective(s) that could be covered in this short tape.
3. List the topics that must be covered to meet the stated objective(s), and arrange the topics in accordance with the sequence suggested by the Health Belief Model.
4. Decide on the key message for the beginning and the ending. Write statements for the topics. You may prepare a written script or only list the topics and talk extemporaneously. A rough outline of the topics to be covered in the dialogue and who is to speak is sufficient. The topics may be arranged in a time-line diagram as shown in Table 8-1.
5. Begin recording using your script. If speaking extemporaneously, start by reading the opening statement, and then proceed as you would in talking about each topic with a friend or a client.
6. Play back the tape. Revise if needed. Test it with a few patients.

During our workshops, the above process is completed by small groups in less than an hour. Participants are under time pressure to do so. The time pressure creates some anxiety, and speaking into a microphone adds anxiety for many as well. Since time permits only a rough outline, nearly all recordings are extemporaneous. You may be encouraged to know that although many enter into this exercise with some anxiety and reluctance, all are enthusiastic about the results they have achieved when they hear their recording aired immediately afterward over the PA system.

Script vs. extemporaneous recordings

Although there is much more vitality and humanness in extemporaneous recordings, many prefer to read from a script. The dilemma here is that although scripts make the recording more predictable, most scripts sound like a written speech that is read. The language tends to be more formal, it lacks interest, and the literacy demand is higher. A nurse who faced this dilemma found a reasonable solution that may be helpful:

"I just can't write a script that sounds natural. All my education has taught me to write in a formal style. But I found a way to overcome it. When I'm going to talk to a new patient, I often make a list of the subjects I want to cover. When I see the patient, I take a tape recorder along with me and turn it on. I soon forget the recorder. After the session is over I transcribe and edit the tape to take out the 'errs' and 'ahhs' and I've almost got a finished script."

Another way to obtain a natural-sounding script is to use a small focus group from the intended audience to read your draft script aloud. Then ask, "How would you say that if you were talking to a friend?" Proceed to revise the script using the audience's words in place of yours, except where they would be wrong.

Extemporaneous expressions and recordings can have an excitement that captures and holds the listeners' attention. Listeners overlook minor imperfections and indeed see them as human qualities. Sometimes, even on their first try, recordings by health professionals achieve drama and high believability.

Converting a pamphlet to an audiotaped instruction

You can use an existing pamphlet or other written instruction as a starting point to produce an outline or script for an audiotape. This is especially easy to do when the pamphlet presents information in a question-answer format, or already contains dialogue.

When using a pamphlet as a starting point, one must guard against trying to include on the tape all the factual information shown in the pamphlet. Stay with the central objective; omit all or nearly all other information.

Comprehension of audio instructions

Factors that *favor* comprehension and acceptance of audiotaped instructions:

1. Listeners respond to the dynamics of the spoken language.
2. People with low literacy skills can understand words and concepts at higher rates for speech than they can read in text.
3. Decoding of spoken words may be simpler than decoding for reading.
4. Common words are used more often in speech than in text.
5. Speech—especially extemporaneously—carries more redundancy than text.

Let us examine each of these in turn. First, the **dynamics of spoken language**. All of the emotional and dramatic characteristics of speech are available on audiotaped instructions. The voice may be soft and confident to inspire trust, or imperative to inspire the need to act. Speech rate can be varied to give emphasis to the more important facts. These qualities are difficult or impossible to achieve with text.

Platt¹¹ (1992) describes how the voice can convey empathy, which is especially important when the client or patient is angry and needs to be reassured that you understand. Such reassurance can deflect a patient's anger so that any subsequent verbal transaction becomes more rational and productive.

Svarstad and Mechanic¹² (1976) point out motivational benefits of speech when the physician speaks in an authoritative manner. In their study, such speech led to a 40-percent higher compliance among patients to take their medications as directed.

Earlier we mentioned the advantages of a dialogue format. Advertisers have used this dynamic for years. Consider the following typical television dialogue to sell laundry detergent—hardly a topic of high audience interest. The television scene is often set in a lady's laundry room, where her friend has just stopped by on her way home from shopping.

After stuffing several dirty shirts in her machine, the first lady reaches for a box of laundry detergent, but is stopped by the visiting friend who says, "Martha! You're not going to use that weak detergent on those dirty collars, are you!"

"Well, this is the kind of soap my mother always used."

"That won't do. Here! (reaching into shopping bag for a box of the sponsor's product). Try this. _____ will make those shirts whiter than white!" etc.

The advertisers know that the dialogue will keep the viewers' attention focused on the TV screen to listen in to this conversation. It is compelling. We too can use this format to gain and hold the attention of our patients.

Now, consider the **higher rates for speech**. Stitch and colleagues (1974) have shown that adults who have lower literacy skills, and who have no intellectual or hearing impairment, can understand spoken instructions at a much higher rate than they can read the same instructions.¹³ This is a significant finding for health educators because:

- Verbal instructions can be presented at a normal speaking rate and still be understood by those with low literacy skills. Indeed, the message is best understood if presented at a normal speaking rate.
- If spoken instructions are said slowly, the listener will tend to focus on one word at a time, with the result that the listener forgets the words that were said earlier. Thus, although the listener hears and understands every word, the meaning of the sentences and the message is lost.

Decoding of spoken words is often less demanding for listeners. Words tend to be heard whole. Even when the listener is uncertain about the meaning of a word, the surrounding content and the syntax may help to convey or reinforce the meaning.

Common words are more frequently used in speech, especially informal speech. This effect can be seen by examining text where both narrative and nonnarrative paragraphs are used. The narrative, which uses active voice, almost invariably has many more common words.

Another way of examining this effect is to apply readability formulas to both kinds of text on the same subject, or even in the same document. The narratives, even those with longer sentences, have readability levels lower than the nonnarrative text. This point is illustrated by comparing text samples from a publication that includes both narrative and nonnarrative forms. The average readability level of a DHEW (Department of Health, Education, and Welfare) publication on alcohol and women is at the 12th grade. But the narrative parts, as shown below, are at about 6th-grade level.

"Work was good—it gave me a feeling of being alive. But when I would come back to my apartment, it was lonely and silent and dark. Finally, I got fed up and didn't go home after work at all—I'd go to a bar and stay 'til it closed."

—Toni, a high school teacher

Redundancy is usually considered a fault in documents though it is prevalent in speech. Redundancy makes understanding easier in spoken communications because it offers alternative opportunities and cues to understanding a message. Notice the redundancy and extra bridging words in this audiotaped conversation, where HCP is the health care practitioner and C is the client:

"CLEAN YOUR NEEDLES WITH BLEACH"

- HCP: First of all, don't share needles. But if you're gonna share, clean your needles with bleach.
- C: Cleaning . . . cleaning my needles with bleach?
- HCP: Yeah, clean your needles with bleach! Take your works—after you fix—pull bleach into the syringe, squirt it out. . . .
- C: What do you mean bleach?
- HCP: Bleach, regular household bleach, the kind you buy at the store.
- C: You mean like Chlorox?
- HCP: Yeah, Chlorox. . . .

Teaching with audiotapes

Teaching with audiotapes has much in common with other methods of instruction. As with other methods, taped instructions are most effective when preceded by a short preamble to provide the context for the message. This should state the purpose of the tape and the benefits to the patient. For example, a preamble for a tape about mixing baby formula might say:

"This tape will tell you how to mix the baby formula so it's just right for your baby. Please listen to the tape; then we'll show you how to mix the formula. The tape only lasts five minutes."

Teaching strategies will vary depending on where the taped instruction is being given and the form of any supplemental instruction. At outpatient clinics, patients can listen to the taped message over a special telephone as illustrated in Figure 8-2. The clinic receptionist invites each arriving patient to listen to today's health message and points to the telephone. "Just pick up the phone and listen," patients are advised. The tape-to-telephone system is low in cost and easy to install. It is described in more detail later in the chapter.

For in-patients, leave a portable tape player and earphones with the patient. Give the patient a brief introduction about the tape and show how to start, stop, and replay the message. A supplemental page may be given to the patient, perhaps with visuals, and blank spaces where the patient may write questions for later discussion with the nurse, physician, or nutritionist. Explain that the tape may be listened to as many times as the patient chooses.

An alternative is to play the tape over the audio channel that is a part of the TV/radio system at many hospitals. This approach eliminates handling the tape player with patients, but does require them to tune in at the scheduled times of play.

A taped instruction can be given to patients for home use. Many patients have tape players at home. An advantage of the take-home tape is that other

FIGURE 8-2

Tape-to-telephone use in a clinic waiting room



members of the patient's family may also hear it and thereby provide support. Audiotape cassettes cost less than a dollar (US), which is comparable to the cost of many pamphlets, especially pamphlets printed in color.

Making your own audiotaped instructions

A little planning makes the work go much easier. Consider enlisting the aid of others to plan and to make the tape with you. A colleague or a small committee can help by reacting to and offering fresh ideas. A committee is also a convenient source of voices for recording a dialogue.

As noted earlier, a productive way to begin is to write your objective (what you want the listener to do); then list the key points that will inform and motivate—better yet *involve*—the listener to take the desired actions. For example, for an audiotape on taking medication to reduce high blood pressure, the hypertensive patient might need the following:

- Motivation to cooperate with the treatment (motivating factors: personal risk and personal benefits)
- Instructions on how to carry out the behavior(s) required
- Information to understand the need for continuity of the treatment

Unlike text, audiotapes operate within some specific time limitation. Listeners tend to lose interest after five minutes, so each tape or tape segment should not exceed this duration. A time-line diagram can be helpful to visualize the time sequence of information (see Table 8-1).

TABLE 8-1

Time-line diagram for a one-minute tape on hypertension medication

SUBJECT/	TIME (SEC.)	TOPIC
Motivation	0	You have high blood pressure, and it could cause a heart attack. But if you take your pills <i>every day</i> , your risk of heart attack will be much lower.
Behaviors	10	Take one of these _____ pills three times a day. Take one pill before each meal with a little water. If you forget a pill, take it as soon as you remember it. But don't take more than three pills during any one day. You must keep on taking your pills even when you feel okay. Get a refill on your pills before your bottle is empty.
Understanding treatment and medication	35	You must take these pills every day for the rest of your life. Your blood pressure now is 170 over 95. This is too high. The pills will make it lower. Call the clinic or your doctor if you feel dizzy—like you might fall down. This sometimes happens. If it does, we may change the strength of your medicine. Don't take a risk! Take your pills every day.
End	60	The little booklet on high blood pressure medicine will tell you more about your medicine and possible side effects. Please turn to page 4 in this booklet. Read each question, and mark your answers on the page.

The monologue above could be easily converted to a more interesting dialogue format between a health care provider (HCP) and a patient (P). The reader is invited to convert the content above into a dialogue—perhaps to a question-and-answer format that can include some of the usual speech responses, like “uh-huh” or “okay.” It might start with the patient asking:

P: Is it true that high blood pressure could cause me to have a heart attack or a stroke?

HCP: Yes, you're at risk for both.

P: Well, is there anything I can do about it?

HCP: Yes, etc. . . .

An audiotape can be especially effective when presented as an introduction or precursor to an educational intervention, for example, a teaching session between a nutritionist and a patient, or a group of patients. Patients may be asked to listen to the audiotape first, and perhaps make notes of questions they may have for the nutritionist. For example, a tape about getting people to change their eating habits to more nearly follow the recent national nutrition guidelines might be planned like this:

OBJECTIVE

To convince the target population to move toward the two key goals of the national nutrition guidelines:¹⁴ eat less fat and eat more fiber.

KEY POINTS

- Cut the fat off meat before cooking.
- Cook with less fat; how to do it.
- Key foods to eat instead of other foods.
- Eat more foods that have fiber, such as . . .
- These can cut your risk of getting cancer.

INTERACTION

- Ask questions, via dialogue, on cutting fat.
- Ask about meals patients would prepare to obtain more fiber.
- Ask which high-fat food patients will eat less of.
- Ask listeners to make notes of questions they would like to ask the nutritionist.

Audiotapes and equipment

This section describes audiotapes and the recorder-player equipment. Fortunately, the tapes and the equipment are reliable, inexpensive, and quite simple to use. We recommend portable tape recorders-players such as those shown in Figure 8-3. The equipment shown is priced lower than US\$50.

Several makes are available for each of the recorder-players in the figure. The larger equipment at the left, with the piano key tab controls, is easier to use, and tends to be more reliable than the smaller units. Controls usually con-

sist of: Record, Play, Rewind, Fast Forward, Stop/Eject, and Pause. Some recorders offer the option of Voice Activation, which means that the player will start to record when sound is present, and will stop shortly after the sound stops. This feature may be convenient, but is not required.

Electrical power sources are from internal batteries, or from an external power adapter (usually included) that plugs into a standard AC wall socket. Thus, there is great flexibility for use for playback to patients at bedside or in the examining room using batteries, or, at a fixed office or waiting room site, operating on AC power.

Patients can *operate the tape player* directly to listen to the health message, or the tape player may be connected to a dedicated wall telephone in the clinic waiting room where patients can pick up the phone to listen. The receptionist may suggest to patients that they pick up the phone. Also, a sign may be placed above the phone—"today's message for your good health"—or a notice about a more specific health topic. Tapes may also be played over a public address system, or over the radio.

Nearly all recorder-players include a built-in microphone that may be used to record voice messages, sound effects, and music. To record a message, push the "Record" tab(s); place the recorder-player about 16 inches (40 cm.) away and speak in a voice that is meant to be heard. It is useful to record a few short test messages first and play these back at different volume control settings to find the level suitable for your voice.

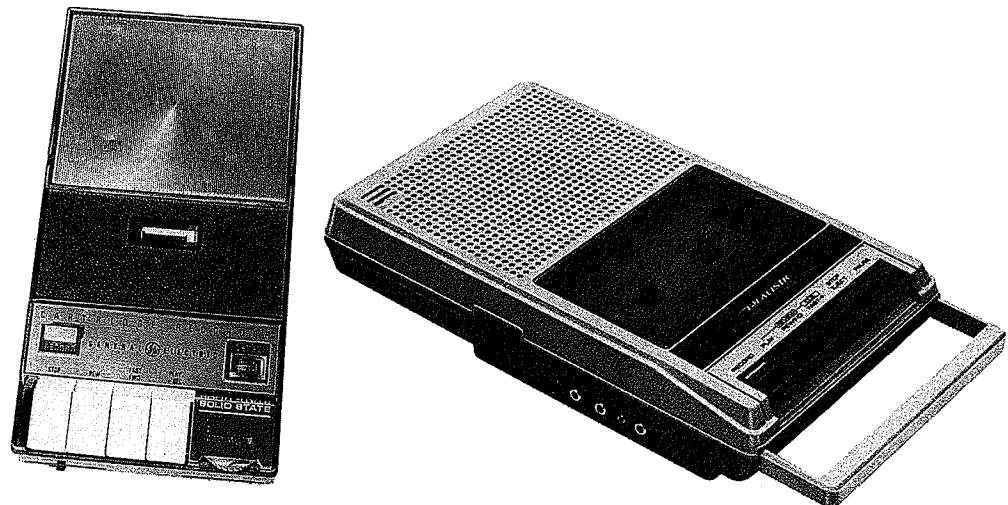
Two tape speed settings, 1.2 and 2.4 inches per second, are options on some recorder-players. Either speed is suitable for voice recordings, but the 2.4 setting is better for music. At the slower speed (1.2), the tape time duration is doubled.

Digital tape-to-telephone systems

In recent years, highly reliable digital technology has come to the tape-to-telephone players. Here is how it works: A standard audio cassette tape with your recorded health message is plugged into a small digital box where it is auto-

FIGURE 8-3

Inexpensive, portable recorder-players



matically stored in digital form. From that point on, when patients pick up the telephone to listen, the message comes from the digital memory and always starts at the beginning. There is no tape to rewind. You can set the telephone sound volume to whatever level is needed to be heard clearly, even in a noisy waiting room.

A digital tape player is shown in Figure 8-4. It is priced at about US\$800. The equipment is about the size of a book and can be kept in a locked desk drawer. Your taped message can be changed in a minute by plugging in a new cassette.

Practical rules in selecting audiotapes

Select an audiotape size to fit your recorder-player. Standard-size cassette tapes are used in most medium- and larger-size portable players. These tapes are labeled C-30, C-60, or C-90 and indicate a combined playing time of 30, 60, and 90 minutes respectively for both sides (15, 30, and 45 minutes on a side). Since audiotaped instructions should be generally limited to about 5 minutes, the C-30 tapes provide ample run time.

Continuous-loop tapes do not require rewinding after each play, but play over and over again. This is a great advantage for settings where the tape player is to operate unattended, such as in a clinic waiting room. Tape durations of 30 seconds to up to 5 minutes are available.

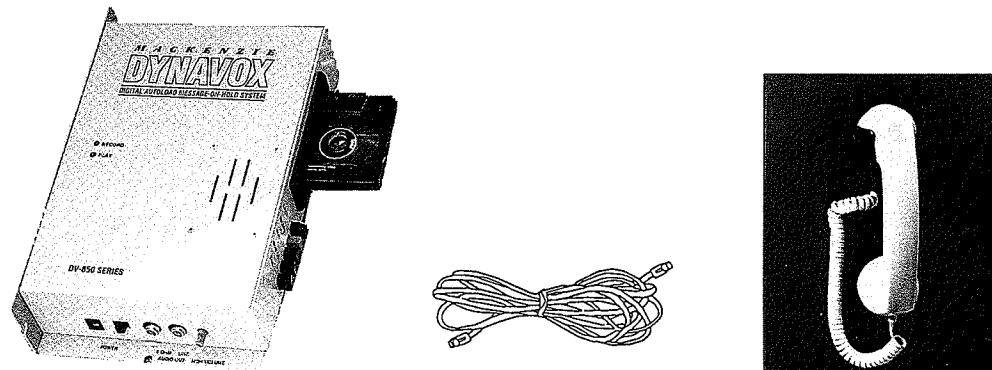
Except for the continuous-loop tape, every tape has a short blank leader at the start. Nothing can be recorded on the leader. The leader is usually clear, as contrasted with the dark brown color of the active part of the tape, and typically has a 7-second run duration. When you plug in a new tape you must let the tape run until the leader has gone by before beginning your recording.

Digital equipment plays back a recorded message that has been stored in digital memory. As such, it does not use cassette tapes at all except as a means to insert the message the first time.

Audio cassettes, such as those shown in Figure 8-5, can be made tamperproof by breaking out the knock-out tabs using a small screwdriver or pocket knife. If you wish to later revise the tape, this can be done by first covering the knock-out tab holes using a small piece of cellophane tape.

FIGURE 8-4

Digital autoloader tape-to-telephone equipment.
(Source: Mackenzie Labs. Inc., Arcadia, CA)



Should a portion of the tape become pulled out of the cassette, it can be rewound by inserting a finger or pencil eraser into one of the sprocket holes on the cassette and rewinding the loose tape.

Summary

Audiotaped health care instructions offer an effective approach to reach the 27 million functionally illiterate American adults. Tapes are also effective with the even larger number of marginally literate adults. The audiotape medium offers many advantages including the potential for cultural compatibility with target audiences.

Few commercially available audiotaped health instructions are suitable for patients with low literacy skills—indeed for any patients. You can easily plan and record your own taped instructions for use with your patients.

The educational principles described in Chapter 2 apply to taped instructions. A summary of these principles is:

- Limit objectives to what the client needs to know and do.
- Consider a sequence in accordance with the Health Belief Model.
- Include interaction with the listener.
- Tell the key points first and last.
- Consider using a dialogue format.

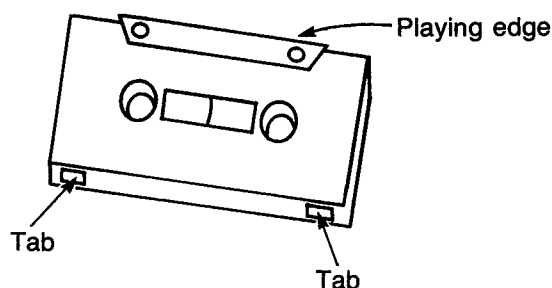
As teaching devices, audiotapes can be used alone or together with other modalities such as a related booklet or interaction sheet. Also, the tape may serve as a short introduction or refresher course prior to the patient seeing the nurse. The equipment to record and play audiotapes is inexpensive and is not difficult to operate.

Part 2: Teaching with Video

Television! Surveys tell us that most people spend several hours every day watching TV. May we assume that surely low literacy adults have no problem accepting and learning from this medium? As with other media, that depends on the video content and how it is used. We address selecting videotapes and methods to teach with television and interactive television so that patients accept and learn from it.¹⁵

FIGURE 8-5

Making tape cassettes tamperproof



Video instructions for patients: What is available?

Impressive numbers of health education videos are available on a variety of subjects. Private sources and government agencies add to this number every week. A 1991 National Cancer Institute (NCI) directory offers over 100 patient education videos on cancer alone, and new videos are being produced for low literacy clients and various ethnic groups.¹⁶ The NCI directory also includes a list of 37 vendor sources for patient education videotapes.

The purchase price for health care videotapes ranges from about US\$20 to \$350, with the average price a little under \$100. Some sources also offer monthly rentals that are about one-quarter of the purchase price.¹⁷ Many videotapes are available on loan from government and nongovernment voluntary agencies at no cost.

Local sources may offer budget-priced videos that are often highly relevant to local patient populations and ethnic groups. Production costs of some locally produced videos are quite low (\$800–\$3,000) and have correspondingly low purchase prices. Examples of these are: (1) "Put Away the Frying Pan," a low-cholesterol education video produced locally using a patient as the star, and (2) "Singing Eyes," a diabetes video narration that shows a series of culturally relevant (Navajo) images from 35mm slides.^{18,19} *A word of caution about "homemade" videos:* By now we are all sophisticated TV viewers and have high standards in terms of production quality. We are not turned off by simple videotapes that are well made, but an amateur video is no longer acceptable.

Selecting videotapes

Television is widely seen as an entertainment medium—we enjoy the story, the color, the action, the emotion, and the sound. Besides, we just watch and listen—we don't have to think or respond. Something more is needed when we want the patient to learn from the video. To select videos that patients are going to learn from, let us examine the characteristics that can make this happen.

Viewing time

Viewers at all literacy levels tend to lose interest in a video instruction after about 8 minutes.²⁰ Those with low literacy skills tend to lose interest even faster. Thus, videos with run times of 8 minutes or less are preferable. To maintain interest in a video with a longer run time, stop the video before 8 minutes and discuss the information presented thus far, or have the viewers fill in a few questions on a worksheet. Then resume the presentation.

When the video contains some humor and a number of scene changes that build interest, the viewers' attention can be held for more than 8 minutes. For example, a 13-minute video on mammograms involving a tense discussion, argument, humor, and scene changes can seem to have a shorter viewing time and thereby hold attention longer.²¹

Some videos can maintain interest for long periods by presenting an absorbing story line. The 30-minute video "Se Met Ko" presents an emotional

human story about AIDS among a minority population in a large city.²² The sequence of information follows the Health Belief Model (see Chapter 2): the risk of AIDS, how to prevent it, the prevention practices that are doable by the viewers, and the peace of mind when prevention actions are taken (the benefit).

Behavior focus

Select videos that focus on behavior changes and how to make these changes. Videos with a heavy factual content are boring to most people, and furthermore, the viewer is soon overwhelmed with the sheer number of facts presented and attention is lost. (See Chapter 5 for the limits on remembering items and facts.)

The authors have analyzed more than 50 health care videos. Some of them present over 60 facts in less than 15 minutes—a daunting memory task for anybody. Since the narrator rarely tells us which among the many facts are the most important, viewers try to remember everything—a frustrating experience.

Interaction

Select videos that offer some interaction with the viewer, either directly from the screen or indirectly by means of a worksheet. Interaction is important because it promotes attention and long-term learning. For videos that are suitable except that they lack interaction, you can add some by making a short interactive worksheet that the patient responds to during or after the video showing. The worksheet should deal with a few key points or behaviors shown in the video.

Since low literacy patients tend to have a short attention span, the first interaction should occur early during the video run time—at the 4- to 6-minute point is about right. Subsequent interactions at 5- to 5-minute intervals should be planned. Some advertised “interactive instructional videos” run for 20 minutes or more before an interaction of any kind takes place. By that time most viewers’ minds are elsewhere.

Other factors in the selection process

The images and people shown should be functionally and culturally appropriate for your patient population. Examples of functionally inappropriate images: (1) a video on nutrition that shows many of the wrong food choices with equal emphasis on the right food choices, (2) a video to promote infant immunizations that portrays germs in the form of huge other-world monsters that few mothers would believe could possibly inhabit their infants.

Check the time allowed to read any text shown on the screen. Viewing time for text is often cut short—a problem for all viewers but especially for low literacy patients. If the viewing time is not sufficient for you to read with ease with time to spare, your patients won’t be able to read the material and understand it.

When people from the target population are involved in writing the script, few if any uncommon words will be used. But when the script is entirely written by health professionals, "hard" words tend to creep in. The video announcers read these with great fluency and speed and the patients may be left behind. The unfamiliar medical words are not the only vocabulary problem. For example, a video on healthy teeth uses phrases and uncommon words in an unfamiliar context: "periodontal disease," "mainly related to," "frequency," "prone to."

Look for videos that employ dialogue rather than monologue speakers or presenters. Dialogue holds attention via the power of the overheard conversation. Monologue video instructions are inherently dull.

Pacing—the tempo and speed at which information is given—can be an important factor in the suitability of a videotape for patient learning. For a young audience, a lively pace and jazzy music may be more appropriate. This pace may be less appropriate for older audiences because they may not be as quick to pick up on the new information presented.

Additional methods to select videotapes

An approach to assessing suitability of a video is to use the 22-factor SAM instrument described in Chapter 4, or the checklist given at the beginning of that chapter. If you plan extensive use of a new video, field test the video with a small sample of your patient population as described in Chapter 10, Learner Verification. A more informal method is offered by Goldman and Zasloff (1994) based on a three-step active watching process.²³ The three steps are:

1. Describe what you see: say out loud or jot down what the video shows.
2. Identify the issues: the main point or theme, as well as more subtle issues such as feelings or cultural images.
3. After viewing, translate the message: in your own words. What does the message mean or tell you to do?

Based on what you've said or jotted down, and your translation, decide whether the video presents what you want to communicate to your patient population.

The Teaching Process

In what ways do you have to teach differently when low literacy patients are to learn from a video instruction? You might ask, "Teaching! But doesn't the video do the teaching? After all, that's its whole purpose." Unfortunately, a great many videos for patients don't deliver the teaching one hopes for and they are poorly suited for low literacy patients. These patients are not lacking in intelligence; they lack literacy skills and the experience that comes with those skills. To make video an effective teaching medium, consider the steps in Box 8-2.

BOX 8-2***Using video with low literacy clients*****PREPARATION**

1. Preview the video yourself and make a list of the key behaviors presented. Note any cues that point to these key behaviors so you can share these with your patients later.
2. Make copies of any lists or texts shown on the video for the patients as a paper copy handout.
3. Consider making a one- or two-page worksheet to obtain interaction with your patients during and/or after showing the video.

THE TEACHING/LEARNING SESSION

1. Preview the video for the patients. Tell them the purpose of the video in terms of its benefits to them. Tell them the main points/topics they will see, and how the video relates to other teaching materials such as pamphlets, booklets, lists, etc.
2. Explain the meaning of any uncommon words. (Use examples.)
3. If the run time exceeds 8 minutes, consider stopping the video and obtaining interaction with patients via discussion or a worksheet.
4. After the viewing, explain again the purpose and how the video can help them. Initiate a discussion about the video; its key points; how the viewers could (or could not) do what the video asks them to do. Ask the viewers to complete the worksheet. Collect the worksheets and use these to guide you in follow-up teaching.

Summary

A variety of videotapes are now available on most health care subjects for patient education. Although many of these can be used effectively to teach patients, many others are unsuitable for patients with low literacy skills. To select videos that are likely to be suitable for patients with low literacy skills, give priority to videos that have a run time under 8 minutes, deal mostly with behaviors, and include interaction.

The video, by itself, cannot be relied on to teach patients. Teaching involvement is required on the part of the health care provider. Your involvement includes (1) preparations before the viewing, and (2) giving the patients a brief preview of the video, (3) assuring that there is interaction with the viewers at appropriate intervals if the 8-minute run time is exceeded.

Part 3: Teaching with Multimedia**Multimedia—What is it?**

Today it means the use of sight, sound, and often interaction with a learning or entertainment system using information from stored discs or from "outside" via telephone or TV cable. For children, for whom learning to use multimedia is second nature, it means video games for entertainment or education

like "Dungeons and Dragons,"[©] a "Sim City"[©] planning game, or a geography learning game like "Where in the World Is Carmen Sandiego?" For adults in industry, it is a way to be retrained to cope with a changing job market. In the health care field, it is an interactive health risk appraisal, or an interactive patient education program on diabetes management.²⁴

For futurists, it is a vision of multiple sources of information accessible to an interactive learning or entertainment cubicle via the information superhighway. They see a merging of the computer with television, with on-line access to Hollywood, the library, and the university. Progress is moving to bring this vision into being, but in this chapter we present multimedia in terms of what exists today and what will be available in the very near future.

The new technology that makes interactive multimedia work is the CD-ROM (the Compact Disc-Read Only Memory) with its huge storage capacity. A single disc can store over 200,000 typed pages or 54,000 individual television picture frames—enough to store nearly all the great paintings in the world's museums.²⁵ The second factor that makes it work is that any picture or page on the CD-ROM can be accessed by the computer very quickly. Thus, multimedia can, within limits, imitate a real live health educator—an educator on call 24 hours a day, one who never tires, one who can instantly call up just the right illustration to explain a patient's question, one who is nonjudgmental and, in the near future, may even talk like a member of your ethnic group and in your language.

Will multimedia replace health educators? Hardly. As with all emerging technology, it can easily be oversold. One is reminded of Thomas Edison's fascination with the future of motion pictures. As late as 1925 he predicted that, "Motion picture technology will soon make books as obsolete as the horse and buggy." In fairness one must admit that television has, to some degree, accomplished that.

Still, it would be foolhardy to discount the potential impact of multimedia. Its use is growing rapidly in the schools, and is expected to make up 18 percent of corporate training budgets in 1997—up from just 2 percent in 1992.²⁶ In patient education, multimedia training programs are available for nutrition, diabetes, and other areas.

Availability of multimedia for patient education

The usefulness of multimedia for health educators is not seriously constrained by technology—the hardware is available—but software is limited at this writing. The software consists of computer programs built upon patient education objectives that assembles information on what is to be learned, the flowcharting of how information will be accessed, presented, and used, and the responses evaluated. The library of such programs, although growing, is still quite modest. Preliminary evidence suggests these programs can be highly suitable for people with low literacy skills.

For example, a multimedia nutrition program aimed at teaching people to choose low-cholesterol foods has been tested successfully with people in rural Appalachia.²⁷ The program is presented on a television screen and the viewer interacts with the TV program by means of a remote control that looks

like a simple TV remote control. A TV talk show setting is used to interview a chef. He demonstrates how to make a low-cholesterol sandwich with advice from the viewer via his or her remote control. As the chef considers various foods to add to his sandwich (lettuce, mayonnaise, etc.) he asks the viewer to choose via the yes or no buttons on the remote control. Depending on the choice made by the viewer, the TV program "branches." It branches one way so the TV reinforces the good decision, or another way to show and explain what's wrong with a bad choice.

Although very few interactive programs are currently available in patient/public health education, within the next few years we can expect a rapid growth in such multimedia programs. The explosive growth of multimedia education for retraining in industry is likely to be quickly followed by a similar growth of multimedia for patient education use.

Compelling features of multimedia education are its flexibility and interaction with the learner—features that are essential for low literacy learners. For instance, it is possible to ask a question and get an answer; to highlight a word that is not understood and see an example displayed on what it means; to have any step in a process repeated as many times as needed to learn it. For health education these features are just becoming available to help patients learn. After more than 40 years of research, Bloom (1986) concluded that,

What any person in the world can learn, almost all persons can learn if provided with appropriate prior and current conditions of learning.²⁸

Multimedia appears to have the potential to provide patients with the appropriate conditions for learning. Furthermore, the patients' responses to information and questions can provide evidence that they understand the instruction—a key requirement in the new JCAHO accreditation requirements.

In summary, modern multimedia is barely here in terms of patient education, but software programs to expand its use are beginning to grow rapidly. Within the next few years, health care practitioners will be using it extensively.

References

1. Kavanagh JF (1972): *Language by Ear and Eye: The Relationship Between Speech and Reading*. Cambridge, MA: MIT Press, p. 135.
2. Joyce CRB, Caple G, Mason M, et al. (1969): Quantitative study of doctor-patient communication. *Quarterly Journal of Medicine* 38:183-194.
3. Forlizzi LA (1989): *Adult Literacy in the United States Today*. Institute for the Study of Adult Literacy, Penn State University, p. 4.
4. Senah CA (March 1992): Department of Health, Port of Spain, Trinidad, private correspondence.
5. Ehman J (1991): BSE Rap (tape), 199 New Scotland Ave., Albany, NY 12208.
6. Becker D (1992): Let's Pull Together: Stop Smoking Inspirational Song. Cure Heart Body Soul Program, Johns Hopkins University School of Medicine, Baltimore, MD.
7. King RC, Hill SC, Fahey LA (1979): *A Report on Migrant Education Television in Australia*. Australian Government Public Services, Canberra.
8. Miller GA (1956): The magical number seven. *Psychol Rev* 63:81.
9. Glanz K, Lewis FM, Rimer B (1991): *Health Behavior and Health Education: Theory, Research and Practice*. See Chapter 3, Rosentock I, *The Health Belief Model: explaining behaviors through expectancies*. San Francisco: Jossey Bass.

10. Walster E, Festinger L (1962): The effectiveness of "overheard" persuasive conversations. *J Abnorm Psych* 65(6):395-402.
11. Platt FW (1992): *Conversation Failure: Case Studies in Doctor-Patient Communication*. Tacoma, WA: Life Sciences Press, pp. 45-47.
12. Svarstad B, Mechanic D (1976): *The Growth of Bureaucratic Medicine: An Inquiry into the Dynamics of Patient Behaviors and Organization of Medical Care*. New York: John Wiley. See Chapter 11, p. 229.
13. Stitch T, Beck LJ, Hauke RN, et al. (1974): *Auding and Reading: A Developmental Model*. Alexandria, VA: Human Research Resources Organization. See Chapter 5.
14. *Dietary Guidelines* (1989): National Academy of Science, Washington, DC.
15. A whole body of literature exists on television production, but since few health care practitioners are ever tasked to produce an instructional video, the subject is not addressed in the chapter.
16. *Cancer Patient Education Videotape Directory* (1991): Pub. No. 91-3105. National Cancer Institute, Bethesda, MD.
17. *Milner-Fenwick Video Catalog*. 2125 Greenspring Drive, Timonium, MD 21093. Toll free 800/432-8433.
18. "Put Away the Frying Pan," The Health Promotion Council of Southeastern Pennsylvania, Philadelphia, PA (10-minute run time).
19. "Singing Eyes" (1994): A story about diabetes self-management. Via. Valentine, Indian Health Service Diabetes Program, Albuquerque, NM.
20. King RC, Hill SC, Fahey LA (1979): *A Report on Migrant Education Television in Australia*. Australian Government Public Services, Canberra.
21. Friedell GH: "For Your Peace of Mind: Get a Mammogram." The Kentucky Cancer Program, Markey Cancer Center, 800 Rose St., Lexington, KY 40536 (13-minute video).
22. "SE Met Ko"—A Video About AIDS. Haitian Women's Program, American Friends Service Committee, 15 Rutherford Place, New York, NY 10003. (In Haitian with English subtitles. Discussion guide booklet in English and Haitian.)
23. Goldman KD, Zasloff KD (1994): *SOPHE News and Views: Communivision: Turning the Tables on the Media*. 21(1):4, 5.
24. *Health Risk Appraisal* (November 1991): Healthy People Program, The Carter Center of Emory University, Atlanta, GA. Version 4.0.
25. Schwier RA, Misanchuk ER (1993): *Interactive Multimedia Instruction*. Englewood Cliffs, NJ: Educational Technology Publications, p. 38.
26. *Washington Post* (February 6, 1994).
27. Strecher V (1994): "Health Talk." An interactive video nutrition program. Health Communications Research Lab., School of Public Health, University of North Carolina, Chapel Hill, NC.
28. Bloom BS. Quoted by Trotter RJ (July 1986): The mystery of mastery. *Psychology Today* 20(7).

9

“What are some examples of other ways to teach?”

Tips on Teaching

“As I learned more about literacy, I began to wonder how I could identify non-readers. Then I realized that wasn’t really the issue. I had to change how I presented information so that I could be sure of reaching everyone.”¹

The “Tips on Teaching” are intended to help practitioners carry out four of the steps that underlie making instructions understandable and acceptable.² The four steps selected are those that are particularly troublesome for teaching patients with low literacy skills. Yet they are essential if health care professionals are to avoid an information overload and to make the new information meaningful. They are also essential to cue the instructor when to review, repeat, correct, or move ahead with additional information. The four steps are:

1. Assessing what patients know about their condition or risks
2. Tying new information into what patients already know
3. Organizing meaningful feedback from patients (interaction)
4. Helping patients anticipate their experiences within the health care setting

Knowing what to expect helps people handle new experiences with greater confidence and greater motivation. With 37 million uninsured needing to access the health care system, many more poor readers new to the system are likely to come under your care.

Feedback from the patient is one element common to each of the four steps. It is this feedback that guides what you teach next, whether to stop and review or continue. Why is feedback a problem? Largely it is due to a difference in perceptions between patients and health care professionals.

PATIENTS

Patients may not understand that giving of information is an essential part of their health care.

HEALTH CARE PROVIDERS

Health care providers may not realize that learning is a transaction. How information is provided influences what patients learn.

Low literacy patients often lack experience in dialogue situations that deal with their personal health. In other aspects of living they have learned the hard way that the less you say the better off you are. On the other hand, many health care providers are not aware that other ways of presenting information are needed for many different types of learners.

Failure to comply with medical recommendations has several causes, but the one that health care providers can control is the way that the patient is taught. Data from recent studies by the National Council on Patient Information and Education give ample evidence of failures.³

PATIENT KNOWLEDGE ABOUT MEDICINES

1. Fifty percent of patients didn't know the correct dosage of their medicine.
2. Thirty-eight percent didn't know the correct timing of their doses.
3. Sixty-nine percent were not well informed about side effects.

CONSUMER ATTITUDE ABOUT MEDICINES

1. Eighty percent said they took less medicine than prescribed.
2. Seventy-two percent said they were inadequately informed about medicines.

These data indicate the need to improve the way we teach. This chapter would not be needed if the solution were only a matter of telling people information and having them deliver the answers, like pushing a button. The dilemma is that changing people's perceptions involves not only changing their knowledge, but also their attitudes, skills, and abilities.

Improving the quality of patient care includes improving the quality of the teaching. The "Tips for Teaching" are aimed at improving the **learning experiences** of patients because what patients experience is more likely to change their perceptions. Each step is discussed with the tips that will help your teaching situation whether it is a one-on-one encounter or a group session. The examples given are intended to stimulate your thinking about how to improve your teaching. Hopefully you will add your own examples as you read through the chapter.

Step 1: Assessing What Patients Know About Their Condition or Risks⁴

Finding out what the patient already knows about his condition or problem and what his attitude is toward it guides you in selecting what to teach and when to teach it. Use questions and/or devices such as pictures or cards to assess knowledge needs.

Establish the context for asking questions by saying something like, "I want to give you some information but I don't want to take up your time by telling you what you already know. So I need to ask you a few questions that will tell me what I need to teach." People need to know why they're being asked questions and what you intend to do with their responses. When they know the context, then they know how to respond.

Tip: Ask questions that will give you clues such as "what" or "how" questions instead of those that can be answered with "yes" or "no."
"Tell me about this problem and what you think might have caused it."

A physician told the author about a patient with a tentative diagnosis of cat scratch fever. The patient kept answering "No" to the question, "Do you have a cat?" The diagnosis was unconfirmed for several days. Finally a resident asked, "Have you ever had a cat?" At this point the patient answered, "Sure, but I gave the damn cat away after he scratched me."

In Chapter 1 the point is made about poor readers taking information literally. This case presents another example of taking a question literally.

The "what" question is useful in assessing what people think they need to learn. It is useful in different kinds of situations, i.e., for a newly diagnosed condition such as pregnancy or diabetes. The answers give you a good idea of what patients think is related to the subject and how important it is. You'll know whether to reinforce what they know, correct misinformation, or start from scratch.

- "What do you think you need to know about so that you'll have a healthy baby" (or "to keep from getting complications")?

Questions that assess patients' diet knowledge also use "what" and "how":

- "What do you think is the best way for you to cut down on eating too much fat?"
- "How do you think you can cut down on cholesterol in beef?"

Tip: Use questions that pose a genuine problem for patients and that also clue you about how they currently handle the situation. ("What do you do when . . .") The answers can tell you whether to present new information, reinforce what patients are doing, or correct misinformation. Examples of these questions are shown for various situations:

- "What do you do when you run out of medicine and still feel sick?"
- "What do you do when your baby won't stop crying?"
- "When do you think that she's sick enough to call the doctor?"
- "What would you do if you woke up in the morning and found that blood had soaked through the bandage?"

Tip: Use devices such as cards, pictures, or actual equipment to identify gaps in knowledge and beliefs, and to assess the accuracy of patients' knowledge. This works well in group settings as described in the following example:

One health educator made several packs of cards with two kinds of statements about AIDS: (1) those of popular beliefs, and (2) those of scientific facts.⁵ Each member of the group took a pack of cards and divided them into three piles depending on what she knew: (1) These are true. (2) These are not true. (3) I'm not sure about these. Then the health educator initiated a group discussion. Each member shared the information in each of her three piles. This information gave the staff a baseline assessment to begin the educational program.

Another approach may be useful for nutrition education. On sheets of paper or cards, paste pictures from magazines, restaurant menus, and nutrition pamphlets. Make three headings that say: "Eat all you want." "Eat if prepared right (tell how to prepare)." "Eat on your birthday." Ask the patient to sort the pictures into these categories. You will have data to give a pat on the back for the correct answers, and to review the errors in the context of presenting new and correct information.

When teaching a specific technique such as taking the baby's temperature, you want to find out what the mother(s) already know. Consider this approach:

Provide a display of two or three kinds of thermometers. Ask which one she/they would use. Rather than commenting on first responses, ask questions about where to get one, the cost, care, etc. Then continue the session, building on the information you received from the mother(s).

Assessing what patients know and believe can become a shortcut for you. It allows you to focus on critical behavioral aspects of health care and enhances motivation for the patient. It also offers an opportunity for the patient to enter into the decision making for his care and begins to develop self-efficacy.

Step 2: Tying New Information into What Patients Already Know^{6,7}

The principal way that the brain "files" new information into memory is by tying it to existing knowledge (see Chapter 5, The Comprehension Process). The association of a new idea with familiar information gives meaning and logic to the new information. The challenge is to find an example that is familiar to your patients and that expresses the concept you want to get across.

Become familiar with the work and lifestyle of the patients in your rural/urban setting. Ask them to tell you about their work or their children. From their descriptions you'll obtain language cues and ways of expressing ideas that you can use later in teaching. You may even find that a part of the regimen you're teaching may not be feasible. For example, a construction worker may not be able to do urine testing for diabetes during a 10-hour shift while working on a highway job.

If you are in home health care, observe the home setting for clues to which you may have to give special thought for routine procedures. For example, how much of a problem would it be for the patient to wash her hands before and after changing a surgical dressing? Running water may not be easily available in many inner city apartments, for homeless people, and for a number of rural areas.

Tip: In teaching vocabulary select the key words, not more than three in one session, that the patient is likely to need to use in his health care.

1. Explain the meaning in the context of a sentence or two so that the patient associates the word with its meaning. For example, the word *ketones* might be critical if the patient is a diabetic. *Example:* "Ketones are chemicals that the body makes when there is not enough insulin in the blood. Ketones that build up for a long time can make you very sick and unconscious."
2. Show the word written in a pamphlet. Have the patient underline the new word and a familiar one that describes it. For example, a pamphlet describing ketones may say: "Ketones give your breath a fruity smell." (Underline *ketones* and *fruity smell*.)
3. If possible also show the word with a picture or with a synthetic body model. In the case of teaching ketones, show a picture of a person with symptoms of nausea or stomach pain so that the patient associates symptoms related to ketones with the word.
4. Ask the patient a question using the word. For example, you might say, "When do you test for ketones?" If it is appropriate, introduce a familiar word that serves as a synonym. For example, *high blood pressure* is a synonym for *hypertension*.
5. The patient needs multiple exposures to the word so that he understands it in different contexts. For example, ask how he'd explain the word to his wife (or friend). Ask him for an example of when he'd use the word. "How do I test for ketones?" If appropriate, ask when he thinks he might use the word the next time he comes to the clinic.
6. If the words lend themselves to using the actual object, such as understanding abbreviations in nutrition for amounts, use an actual teaspoon to explain "tsp." or tablespoon to explain "tbsp." In therapy situations, use pictures or synthetic models of the body, or if appropriate, the brace or device itself to explain vocabulary.

One nurse told the author that after a visit to the OB/GYN clinic, a patient called the hospital operator and asked, "Where's your cervix?"

7. Use audiotapes to teach vocabulary. Select the key words (not more than three to start) that the patient needs to learn to manage his condition—words he'll need to use often. Make an audiotape, using the word, putting it into a sentence. Give him the tape to take home. Later have him record some sentences using the words on the tape. Eventually he can build his own word list for his condition.

Tip: Use real-life experiences to tie new information to existing knowledge. People think better when they are more relaxed and doing something. It helps relieve some of the tension and stress inherent in health care settings. Most of all, comprehension improves when the brain “exercises.”

EXPERIENCING THE INSTRUCTION:

Examples follow for various situations:

Example: In one third world country a health worker planned a demonstration as part of a group session to teach how hookworm is transmitted. She had brown paper ready and asked several people to stand on the paper in their bare feet. With a felt-tip pen she drew an outline of their feet. Then she drew a dot on the foot outline to indicate where the worm could have entered their bodies.

Example: Have the patient practice the procedure and feel the benefits. For example, practicing deep breathing results in a much stronger learning experience than just being told to breathe deeply. Tell the patient: “Put your hands on your ribs and feel your own lungs fill completely with air.”

Example: People need to experience the goal that they set. If weight loss is a major part of your instruction, prepare 25- or 50-pound bags of sand and have them in your office. Ask the patient to try and pick up the bag. Say: “I want you to really *feel* what you are carrying around with you. This is what you need to lose.”

Example: It helps for people to taste the foods that are new to them, such as low-fat snacks. Bring the makings for low-fat snacks to a group session and have the participants make and eat them.

Example: For community workers dealing with clients in a community setting in conjunction with nutrition, invite a master gardener (available through many agricultural extension centers) to help launch a grow-it-yourself project. Initiate a community garden program under the guidance of a master gardener consultant. Have a harvest fair or harvest supper at the end of the season to celebrate the successful gardens.

SIMULATING THE INSTRUCTION:

Examples follow for various situations:

Example: There are different ways to obtain information about dietary habits. Instead of using a questionnaire, consider obtaining your information by using a simulation experience. Create a cafeteria line using food models and ask people to select what they usually eat for breakfast, lunch, and dinner. The results may not be as accurate as you wish, but the opportunities to clarify information are much greater than if you rely only on oral responses.

Example: In teaching nutrition, create a grocery store setting where clients can learn to read ingredient labels, select foods for a prescribed diet, use unit-pricing information, and do comparison shopping for store brands versus advertised brands. This could also be an exhibit in the waiting room.

Example: Video is particularly well adapted to help simulate health care experiences. For surgical procedures or different forms of therapy, video offers the motion as well as the visual image to help the patient anticipate the experience (see Chapter 8, Teaching with Technology). It is important for learning to provide opportunity for the patient to respond and ask questions.

Example: Play equipment can be used for adults as well as children. For example, when the author used play equipment in the dental clinic, adults as well as children became very interested in going through the experience of making fillings and placing them in the teeth. The experience of working directly with the things the dentist would use later gave them a sense of confidence that it wasn't going to be "too bad."

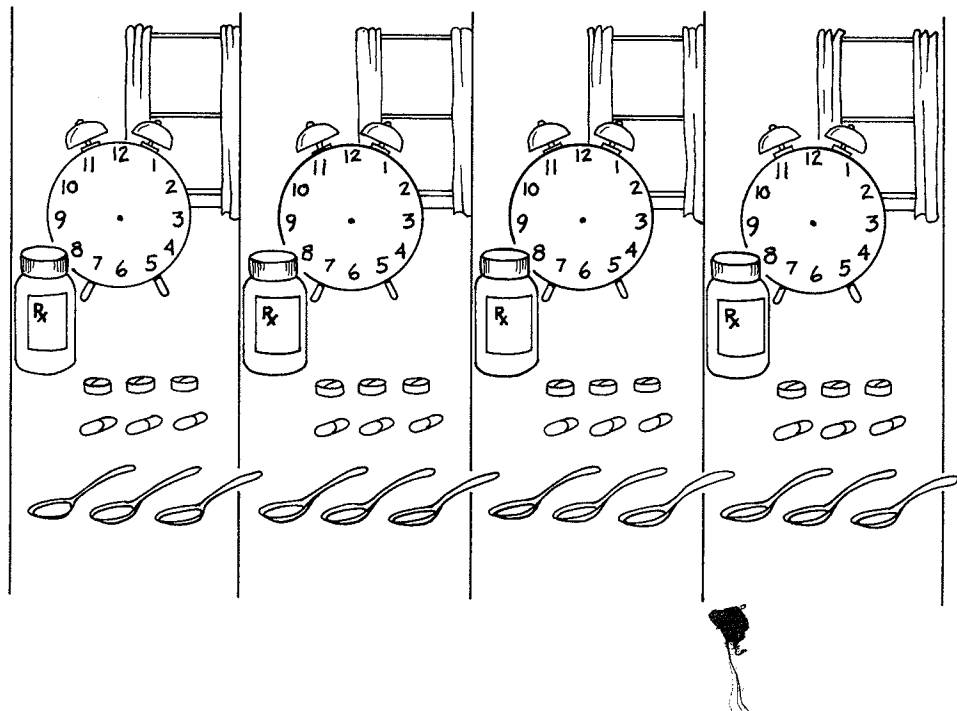
To teach when to take medicine, consider using a sheet such as Figure 9-1. If the patient can mark the hands on the clocks for the appropriate times, and draw circles around the pictures of the medicines, it will create more interest and help memory.

Tip: Review and reinforce new information. People need to have new information reviewed often so that it can be firmly tied to their existing knowledge. Plan for variety in the ways that you review and reinforce. In this way you are able to achieve a better match with the learning styles of different people. Some of us are visual learners, some auditory, some tactile. Here are some ways to review new information and at the same time introduce variety in your teaching:

For a specific procedure: Prepare cards with each step of the procedure pictured on a single card. Ask the patient to put the cards in a row, in the order for carrying out the procedure correctly.

FIGURE 9-1

Reminder sheet for medications that the patient marks and takes home.
(Source: Do You Understand? Literacy Volunteers of America, 5795 Widewaters Parkway, Syracuse, NY 13214-1836)



For behavior change: To encourage patients to quit smoking, make a pack of cards with a few words (or pictures) on each, suggesting things they could do when they get the urge to smoke—take a walk, call a friend, eat an apple, go fishing, etc. Have the patients sort the cards with those activities most likely to be chosen on top, those least likely on the bottom.

As a reminder: “Five-Finger Reminder”: Draw the patient’s hand on an 8¹/₂-by-11-inch piece of paper. On each finger and the thumb, write the things the patient suggests she can do to keep from getting angry at her children. Put it on the refrigerator door.

Low literacy patients may well have to hear information more than once. They need to practice what they’re supposed to do in small steps several times. When the patient is practicing and begins to struggle, suggest two possibilities. Ask the patient to choose the one he thinks is the best. If that doesn’t work, give the correct response; then come back later to give the patient the chance to succeed.

For both review and reinforcement, consider using a videotape or an audiotape on the subject. Afterward, discuss what the patients found out that they didn’t know before or hadn’t thought about. Use low-reading-level pamphlets that they can take home and share with their friends or family.

If the purpose is suitable, plan on using a demonstration for review. Have the patient show how to carry out the procedure. For a diabetes class, one diabetes educator told the group that next week they would review foot care by having everyone take off their shoes and stockings and they would examine each other’s feet.

They came prepared for the session, and to the instructor’s surprise, they were much more thorough in making their examinations than she thought possible.

Consider the following examples for reinforcement:

- If you’re advising a midday rest, hand out a “Couch Potato License” with rest hours listed on it.
- For patients who need to watch their diet, with their help, make a refrigerator calendar of “Snack of the Day.”
- Have a selection of recipes and have patients copy three new recipes they agree to try. Give them a return postcard with check-off boxes to tell what they thought of them.

Step 3: Organize Meaningful Feedback from Patients (Interaction)⁸

Tip: Plan a portion of your instruction for feedback from the patient. One way to organize feedback is to plan to use at least the last few minutes of an instruction for a rehearsal speech by the patient on how she’ll explain what she has just learned to her family. If you have several patients in the same circumstance, have them work in pairs and explain what they’ve just learned to one another. The instructor should monitor these interactions. Later, have them share what they have learned with the whole group.

Include a family member in this initial instruction if possible. If two people get the information, they can check with each other later on the accuracy of their memories. Furthermore, they reinforce one another.

Review written material together; when you ask the patient to underline the most important information, it shows that you care about her learning. Interaction of this kind serves to stimulate memory.

Even a pamphlet with a high reading level can be used by marking off ahead of time the particular page or visual that you want the patient to have. In this way the patient will not be intimidated by going through the material just to find one page that is useful.

Teach patients in pairs so they can share the learning experience and reinforce each other. The more patients can rehearse and see the application of new information to their real-life situation, the greater the chances for long-term memory retention and compliance. This kind of sharing can work well with patients of a mixed socioeconomic background and with a mix of reading skill levels. The reason it works is that the sharing session is problem centered rather than subject centered. People are more willing to share when they perceive that they have common problems. They're "all in the same boat."

Tip: Summarize what the patient is to do. Another way to organize feedback is to summarize what the patient is to do using an easy-to-read handout sheet or pamphlet. This sheet is then given to the patient to take home. For example, after the tests are completed and the health care provider is ready to dispense medicines or write a prescription, take your time to explain carefully how each medication is intended to help. Point to the medication listed on the written handout.

Ask the patient what it is for. Then explain the dosage and again use the sheet to make sure the patient knows where it is written down. Tell the side effects and show where they are explained on the sheet. Then the health care provider might say:

"I want to be sure I didn't leave anything out that I should have told you. Would you tell me now what you are to do so that I can be sure you know what is important? You can use this handout sheet as you tell me what medicines you will take and when you'll take them, the dosage, etc. What about diet? Exercise? Rest?"

Tip: Plan with the patient to recognize small successes. Because many poor readers suffer from low self-esteem they need to feel good about the effort they make. You can help them to feel good. Plan the health education session so that they can experience small successes along the way. Giving them support by saying, "You're right!" may be sufficient. However, there are additional ways to reward small successes. Here are some examples:

Example: Together with the patient, make a list of nonfood rewards for days when the patient completes an exercise routine, keeps a diet plan, stays off cigarettes, or doesn't yell at the kids.

Example: Color Me Healthy": Have waiting room coloring sheets on a variety of subjects or that show traditional foods for holidays.

Example: "Health Hero/Heroine of the Month": Use an overhead projector or other light source to project a strong light on a poster board. Have the person sit between the light and the board to create a silhouette. Draw around the shadow. Caption the picture with the accomplishment (e.g., quit smoking, lowered cholesterol, had kids immunized). Print the name of the honoree. Change every month.

Example: Some weeks after surgery, the moment arrives to suggest or reinforce lifestyle changes that will lower the risk of recurrence or complications. Sending patients an easy-to-read pamphlet or newsletter may be just the trigger needed to initiate the desired behavior. We can all use a gentle prod, but low literacy patients may especially benefit from verbal and pictorial information about how to access exercise programs, support groups, or other resources. They do not regularly read a newspaper or see notices that come to the attention of more skilled readers.

Step 4: Helping Patients Anticipate Their Experiences Within the Health Care Setting⁹

Preparing people for what is likely to happen makes the experience less traumatic and therefore more manageable. The health care setting is not intimidating to us because we know what to expect. However, it can create anxiety for people without good reading skills who lack a fluent vocabulary for making themselves understood. Once they are within "the system" they might think they would be bothering the nurse or doctor if they asked questions. They don't want to be perceived as making a fuss. If they are from a different culture, the experience can be more intimidating.

Tip: Provide orientation to patients on what to expect within the health care setting. Patients need to understand and be able to anticipate the experience they will have in the hospital or clinic system. Orientation can be provided in different ways by staff and also by trained volunteers from the community. Five tips on what the orientation might include are given below:

1. Patients must answer many questions: Many patients are not prepared for this. It would help to be told in advance:

"You will be asked a lot of questions from the time you arrive until you leave. You will be asked about your name, where you live, your family, as well as about your illness or reason for being there. Doctors, nurses, and other people ask you questions because they have a lot of different ways they can help you. They have to select the way that is best for you."

Without this kind of explanation, patients can get a completely wrong impression. The author was told by one patient, "He can't be a very good doctor if he has to ask so many questions." Patients might be told:

"It is the information that you give the doctors that helps them pick the treatment that is best for you. So if you don't understand their question, be sure to tell them that you don't understand. They'll be glad to explain it. Your information is most important.

"Sometimes you will be asked the same question by different people. That's okay. All staff members have to keep their own records so that they can use the information for the special way that they can help you best.

"On return visits, you will be asked questions again. Doctors and nurses need to know whether to keep you on the same treatment or whether to change it. So they ask questions to help make the treatment right for you."

2. To explain receiving treatment from different professionals, the patient might be told:

"You may need to see different doctors or nurses or others who have special training for your particular problem. They have many different ways to help you. They want to be sure that you get what you need.

"Doctors and nurses and other staff all have a work schedule that they have to follow. The doctor that sees you the first time may not be working on the day when you come back. So you may see a different one depending on the work schedule or the kind of help you need. It may take a little longer if you have a different doctor but don't worry about it. The doctors and nurses will be using your record that you helped with when you answered all those questions."

3. You can legitimize the asking of questions about words patients don't understand by saying something like this:

"It's not only okay but doctors and nurses want you to ask questions when you don't understand the words they're using. They use big words so much in talking to other professionals that they may forget you do not know those words. Ask them to give you an example of what they're explaining, or show you a picture of it.

"Sometimes doctors and nurses use words you are familiar with but they have a different meaning in health care. For example, they may talk about your body "cells." You may think they're talking about a "jail cell." They're talking about the very small parts of your body. The word cell has a different meaning here.

"If what they're telling you doesn't make sense to you, ask them to stop and explain the word. Don't be afraid to tell them what you think the word means. They have no way of knowing unless you tell them. You will be helping them by letting them know that you don't understand.

"They can use pictures, show you, or call in another person who can help you. Don't guess or think that you'll ask your friends to help you. Most of the time they won't know either. It saves time if you let the doctor and nurse know right away."

4. To help patients understand that results from lab tests may take days or longer, say:

"It may take several days or several weeks for doctors and nurses to learn the results of your tests. This is because several other people have to take part in the testing process. And those people may have to wait a few days, too, if there is some special test they have to carry out. Sometimes your test may need to be seen by people in other cities or other clinics so they can give your doctor and nurse the best information.

"Doctors and nurses also wish that you could get the answers faster. But new tests have many steps and they each take a certain amount of time."

5. To help patients understand that appointments for follow-up are just as important as their first visit, you might say:

"Depending on what's wrong with you, you may be asked to return so the doctors and nurses and others can see how well you are doing. This happens all the time to almost everybody. It's because we all respond differently to treatment. You may need a different medicine, or treatment. It is very important for you to return to see the doctors and nurses when they tell you to. They may give you a piece of paper called an appointment slip with the date and time marked on it.

"You may be asked to see other people who have special training such as people to help you walk or talk better. This kind of help is called rehabilitation. Sometimes it may not be clear to you why you are being asked to see them."

Most institutions have a pamphlet or a means to orient patients to the particular care they may receive, e.g., pregnancy, checkups, surgery, rehabilitation. The above scenarios explain some of the "culture" of the health care system to people who don't have the logic, language, or experience skills to have learned this procedural information on their own.

Additional Tips

Handling information that you didn't have time to teach: When you want to keep the amount of information within your time limits or the patient's, consider using other media. The patient can take the information home to review under less stressful conditions. You might say:

"There are other things you should know that will help you in your recovery. I've made an audiotape you can play when you get home that will tell you about some of these things. I will call you in a day or two and we can go over any questions that you have." (Most people, including those with low literacy skills, have tape recorders or have easy access to one.)

If you find yourself approaching burnout from repeating the same instructions, an audiotape or videotape can be an ever-patient teacher. If you have taught a concept in your traditional way and there are patients who need review, use a different medium for a second (or third) instruction.

Check out your media carefully—use SAM (see Chapter 4, Assessing Suitability of Materials), a materials checklist, or a group of patients to review for the suitability of any medium you use.

Coping with distractions: Distractions are a frequent concern in all health agency settings. They may come from children wanting attention, telephones, radios, TVs, or construction and street noise. The patient may also be preoccupied by stress or for other reasons that you can't detect.

Don't try to talk through the distractions. If you do not have the patient's attention, wait until you do. If it is not forthcoming, you might say, "This does not seem to be a good time for us to talk. Tell me when it would be better for you because this is important." This approach opens up the topic of why it's important and the need to enlist cooperation from the patient. It is common for people with low literacy skills to have multiple problems.

Children in the home or who accompany parents to other settings can make concentration impossible for adults. Try to engage the children in other activities or provide space for youngsters apart from their parents, if you can.

Two Case Studies: Putting It All Together

Two case studies are presented that apply many of the points made earlier in this chapter. The first case study is for a one-on-one interaction and the second case study is for group teaching.

Case 1: One-on-one interaction: building an agenda to increase compliance

One of the most common interactions between health care providers and patients occurs when a diagnosis has been made and a prescription for care is advised.

Ley and colleagues have shown that organizing what is said into an agenda and following a logical sequence can increase recall nearly 50 percent.¹⁰ Such a conversation begins by telling a patient what the agenda contains: "I'm going to tell you:

1. What I think is wrong with you.
2. What tests we need to carry out to be sure.
3. What I think will happen to you.
4. What treatment you will need.
5. What you can do to help yourself."

Then each point is "fleshed out" with appropriate information:

Probable diagnosis: "You have a chest infection. Your larynx is slightly inflamed. But I think your heart is all right."

Tests needed: "We will do some tests to make sure. We will need to take a blood sample and a chest x-ray."

Outcome prediction: "Your cough should disappear in the next two days. You will feel better in a week or so, and you should recover completely."

What I can do: "I will give you an injection of an antibiotic and some pills to take for 10 days. I will give you an inhaler to use when you get stuffed up and can't breathe."

What you can do: "You should keep out of cold drafts and stay inside when the weather is foggy. It would be good to get two hours of rest every afternoon. If you continue to feel sick after three or four days, call me."

By framing the information in this way, the advance organizers signal where the conversation is going. The patient is able to gather the threads of information with ease and is much more likely to remember them. Health care providers are much less likely to leave out steps important to the patient if they adopt an agenda approach to their instruction.

Case 2: Group teaching: sharing the information^{11,12}

Effective group teaching is highly participatory and open in the sense that group members respond to questions rather than a didactic or more closed teacher-student interaction. This shared-response approach builds group cohesion, which aids motivation. Even responses that miss the point are welcome. They help clear up misconceptions and provide opportunities to make critical judgments. These are essential to self-confidence in managing a situation.

A basic agenda may look like this:

Preparation: Plan to review information from the previous session in an interactive way. For example, to review a session on bathing and dressing a baby, show the participants a series of pictures that illustrate good practice. Ask them to explain why the action shown is important.

Arrive early enough to check on the facilities. Greet each person upon arrival. This sets the tone for the session and invites interchanges that might be appropriate for the session.

Objective: Present a brief outline of what is to be learned at the session. For example: "Today we will learn how to take your baby's temperature and what to do if your baby has a fever."

The Session:

1. Begin by exploring what the clients already know (Step 1 in this chapter). For example, provide a display of two or three kinds of thermometers. Ask which one they would use to take a baby's temperature. Rather than commenting on first responses, encourage others to answer.
2. Lead a brief discussion (not a lecture) asking questions about what makes the correct thermometer appropriate. Then talk about where to get one, the cost, care, etc.
3. Using a baby or doll model, if you have one, demonstrate the correct procedure. Clients need to see the action and see themselves doing it. Talk your way through the action while you demonstrate.
4. Ask the clients to follow your example and tell what steps they are taking while they practice. If they feel uncomfortable doing this, explain that it is a memory aid and will really make a difference in what they learn and how they do it.
5. Continue with a discussion of other aspects of what to do if you think your baby has a fever.

Review and verification:

1. Provide a way to check on each important point. For example, have group members read thermometers with different temperatures displayed.
2. Review all major points. *Example:* Give pairs of participants descriptions of different situations. One possible situation might be, "Your mother-in-law says, 'You don't need to take the baby's temperature. Just feel his forehead.' Ask, "What are the steps you would take to deal with this situation?" After you give an example, ask the participants for examples of other situations where they might need to explain why they're taking the baby's temperature.
3. Provide easy-to-read materials and pictures that review the points made in the session just completed. Write each participant's name on the copy you hand out to them. That sends the message, "This is meant for you!" Point out where the key information is located as a further review. Have participants use a colored marker to highlight the important points.

Getting ready for the next session:

1. Give a preview of the next session. This could be a brief skit for the next session that indicates the topic to be discussed. For example, "A new mother picks up the phone as she says, 'I wonder what Mary does when Jason won't stop crying.'" This should raise questions but give no answers—a teaser to encourage clients to return.
2. Thank each participant, and if you feel inclined, add a personal remark. For example, "You gave us some good examples today. Thanks!" Or to a quiet person, "I'm glad you could join us today."

Instructors often ask about how to handle different kinds of personalities and learning styles in group sessions. Table 9-1 identifies six kinds of problems you may encounter and some possible ways of handling them.

TABLE 9-1
Ways to improve effectiveness in group instruction

PROBLEMS	POSSIBLE SOLUTIONS
1. Anxiety high for the less skilled.	1. Don't call on individuals. Ask them to work in pairs.
2. Wide learning differences and learning styles.	2. Use video, audio, pictures, in repeated presentations.
3. Some participants are slow to learn.	3. Teach in small units; review often; provide repeated examples and practice times.
4. Quick learners may become bored.	4. Ask them to demonstrate and teach others; use variety of teaching methods.
5. Feedback is hesitant and uncertain.	5. Clarify success criteria; ask participants to self-evaluate in pairs.
6. Record keeping is difficult.	6. Make a clear teaching plan; use checklists to monitor progress.

Summary

Improving teaching methods requires a willingness to reach out and try new ways of communicating with patients or clients. People remember better when they find things out for themselves and have the opportunity to apply what they have learned. Organizing a teaching plan ahead of time makes it possible to be sure you've included the key points. Sharing the agenda with the patients helps them remember your message.

Experiencing the information is the most likely way to accept and remember it. Teaching in a family or in a group situation creates opportunities for broader experiences to be brought to bear on the problems. In the American culture the teacher is not the sine qua non of information but rather the facilitator of learning for others.

References

1. Szudy E, Arroyo MG (1994): *The Right to Understand: Linking Literacy to Health and Safety Training*. Berkeley, CA: Labor Occupational Health Program, University of California at Berkeley. See Chapter 3, Getting to know your audience, p. 37.
2. These tips help in meeting new patient education standards. Accreditation Manual for Hospitals (1993): Patient and Family Education. Joint Commission on Accreditation of Healthcare Organizations, One Renaissance Blvd., Oakbrook Terrace, IL 60181.
3. Compliance: Do the Right Thing—A Planning Guide (October 1992): National Council of Patient Information and Education, 666 11th St. NW, Suite 810, Washington, DC 20001.
4. Knowles, M (1978): *The Adult Learner: A Neglected Species*. Houston, TX: Gulf Publishing Co. See Chapter 3, A theory of adult learning: andragogy.
5. Ramos L. MPH Project Manager. Latinas AIDS Literacy Project, University of Southern California Department of Family Medicine, 1420 San Pablo St., PMB-B205, Los Angeles, CA 90033.
6. Werner D, Bower B (1982): *Starting with What Is Already Familiar to Students. Helping Health Workers Learn (Chapters 5–11)*. The Hesperian Foundation, PO Box 1692, Palo Alto, CA 94302.
7. Thelen JN (April 1986): Vocabulary instruction and meaningful learning. *Journal of Reading* 29(7):603–609.
8. Hand JD (1982): Brain functions during learning: implications for text design. As contained in DH Jonassen (ed), *The Technology of Text: Principles for Structuring, Designing, and Displaying Text*. Englewood Cliffs, NJ: Educational Technology Publications.
9. Bandura A (1977): How individuals, environments, and health behavior interact: social learning theory. As contained in K Glanz, FM Lewis, and BK Rimer (eds), *Health Behavior and Health Education: Theory, Research and Practice*. San Francisco: Jossey-Bass.
10. Ley P, Eaves D, Walker, CM (1973): A method for increasing patients' recall of information presented by doctors. *Psychological Medicine* 3:217.
11. Werner D, Bower B (1982): *Helping Health Workers Learn*. Hesperian Foundation, PO Box 1692, Palo Alto, CA 94302. See Chapter 5: Planning a class, pp.5-1—5-18.
12. Cartwright D, Zander, A (1968): *Group Dynamics: Research and Theory*, 3rd ed. New York: Harper & Row, 580p.

10

*"How do I find out
if patients can
understand the
material?"*

Learner Verification and Revision of Materials

The Concept

Learner verification and revision¹ is an interview procedure to verify the suitability of a health instruction with the population who is to use it. The purpose is to assure that mismatches in communication as well as unsuitable design and content are uncovered. Learner verification and revision is especially useful during the development phase. For materials already completed, it can reveal the need for supplemental teaching aids.

Since it is formative research, only small samples are required. The procedure is not time-consuming and can be conducted within normal work schedules. Objectives for the reader of this chapter are:

1. To learn how to carry out the learner verification procedure
2. To evaluate its results

The Rationale

Because of the training and experience of health care professionals, they do not share the same logic, language, and experience as the rest of the American population. Thus, there are often mismatches and gaps in the instructions. For the intended population, these communication problems may lead to misunderstanding, disbelief, and rejection of the health instruction. Learner verification and revision uncovers the specific content or format features of an instruction that are not understood or accepted, and the process often produces remedies.

Here are a few simple examples of how we “talk by” each other:

- One of the authors tested the word “avoid” in a nutrition pamphlet with eleven patients in a metropolitan hospital (1992). Only one of the eleven knew the behavior for “avoid”.
- Nutrition claims in advertisements are often misinterpreted. For example, the term “cholesterol-lowering” was often mistaken to mean “low calorie”.²
- For quite some time we’ve known that patient knowledge of medical vocabulary is poor. Words like “cardiac, orally, therapy” were understood by less than 50% of those tested (Samora, 1960).³ Similar work by Larrabee (1977) continued to show problems with words such as “palpitations, stroke, sputum, thyroid” etc.⁴

Quality assurance of educational materials is essential to achieve patient education program objectives. Learner verification and revision is a process that improves quality by finding out what people understand from an instruction while it is still in draft form and easy to change.

Some comments from health care professionals who have found Learner Verification and Revision to be highly useful are as follows:

- “It is so easy to do. I take my draft and go visit 5 or 10 patients. It’s amazing what they see in the instructions that I would never see.”⁵
- “These interview techniques (qualitative) were found to be quite satisfactory in eliciting expression of beliefs, feelings, and attitudes about the nutrition materials being tested.”⁶
- “The assessment identified portions of text and graphics that confused some readers. We used that assessment to improve the booklets by changing the confusing text and illustrations.”⁷
- “After testing four drafts of a cover for our booklet, we took a hard look at our objective. It was to inform patients about a procedure. . . Then the rest was easy.”⁸

Specific Elements to Be Verified

Learner verification and revision identifies the likelihood of the instruction influencing its audience: Will it be attractive to the audience? Can people understand it? Do they feel that they can carry out the message? Is it culturally suitable? Does it make sense to carry out the message?

Attraction: First the communication needs to attract its audience. If the patient doesn’t look at it, there’s no chance for influence. Is the instruction appealing enough to carry the patient into the message itself? Are the visuals of interest? Do the colors fit the tone and mood of the subject? For an audiotape or videotape, is the voice easy to listen to? Is the diction distinct? Is the speed reasonable? Is the accent understandable? Are any aids needed?

Comprehension: This is a critical component for all patients. It is especially critical for patients with low literacy skills because they can access fewer information resources than highly literate patients. Can the patients tell you in their own words what the message meant? What other interpretations are possible?

Are there so many actions asked for that the patients become confused? Are there concept, category, or value judgment words used that may not mean to patients what they mean to you?

Can the patients demonstrate, show you, or tell you what they believe they are supposed to do as a result of being exposed to your message? Comprehension occurs when the person can convert the message from one format to another. So if patients look or listen they should be able to restate the message by demonstrating or showing you what the message says.

Self-efficacy: Do patients feel that the message is doable for them? Do they feel confident that they have enough information and skill to carry out the instruction? If they are uncertain, what kind of additional instruction is needed?

Cultural acceptability: Is the message in any way offensive? Is the message perceived as true? Are there any annoying elements? Hair styles, jewelry, dress, and background settings all enhance or detract from cultural suitability. The ways that deeper aspects of culture may be presented or alluded to also strongly influence cultural acceptance. Such aspects include child-rearing practices, roles of men and women, views about birth and death.

Persuasion: Is the message able to convince people that they should take action? Would other people in the community likely follow this advice? What might this instruction say that would make it more helpful?

Learner Verification and Revision Procedure: The Overview

What kinds of media can be verified? All media can be verified. When do you verify? At the conceptual stage, draft stages, or upon completion. The most cost-effective time is in the concept or early draft stage.

Step 1: Preparation

DETERMINE THE OBJECTIVE (PURPOSE) OF THE MATERIAL

Since few instructions state the objective, you may need to study the instruction and ask yourself, What should the person be able to do after reading, viewing, or listening? Write out your perception of what the instruction should accomplish.

Identify the key points of the message and the likely trouble spots. Write down the key points that you think are critical for the patients to understand in order to carry out the message or behaviors. The key points may be located up front, in the middle, or at the end. Likely trouble spots include the meaning of any concept, category, or value judgment words. What parts of the visuals need testing? Will the layout be easy or hard for poor readers? Trouble spots also include typography. The key points and likely trouble spots are a critical input to the next step.

PREPARE THE QUESTIONS FOR THE INTERVIEW

Questions need to test patients' understanding of the key points mentioned above. Questions also need to determine the likely influence of the instructions, i.e., attraction, self-efficacy, cultural acceptability, and persuasion.

TRAIN INTERVIEWERS

A short orientation for interviewers may be needed to help them understand that learner verification and revision is *not* an instructional session. The purpose is to obtain feedback on how well people understand the information presented. The learner verification and revision process is not difficult—it's fascinating—and it is not time-consuming.

PLAN THE SAMPLE AND SELECT TEST SITES

Plan the sample to include the age and gender according to the nature of the message. The size of the sample depends on the level of confidence you want; for national distribution of the material use a sample size of 30–50. For local use, a sample size of 10 may be sufficient. Select test sites where the intended audience is likely to be found.

Step 2: Interview respondents (patients)

During most learner verification and revision interviews respondents are asked to retain the material and are encouraged to refer to it throughout the interview. Follow the sequence of questions in the order they are written on the questionnaire. Record responses verbatim. Do not ad lib or interrupt the respondents. If the respondent is tired or wants to quit, fine. Mark the interview incomplete and proceed to the next person. Typically the interview takes about 15–20 minutes.

Step 3: Evaluate responses and revise

Tabulate the responses to the questions and look for answers that are different from what you expected. Evaluate the differences by asking yourself, How important are they in terms of the patient carrying out the message? Is this misunderstanding going to cause real problems? Or is it nice to know but not essential? How many patients had the same number of different or incorrect responses?

Revise according to the nature of the trouble spots and the number of patients who gave incorrect responses. Retest to make sure that any major revisions have indeed corrected the trouble spots and not introduced new ones.

This completes the overview of the learner verification and review procedure. Detailed information is now given for each of the steps, along with examples.

Learner Verification and Revision: The Details

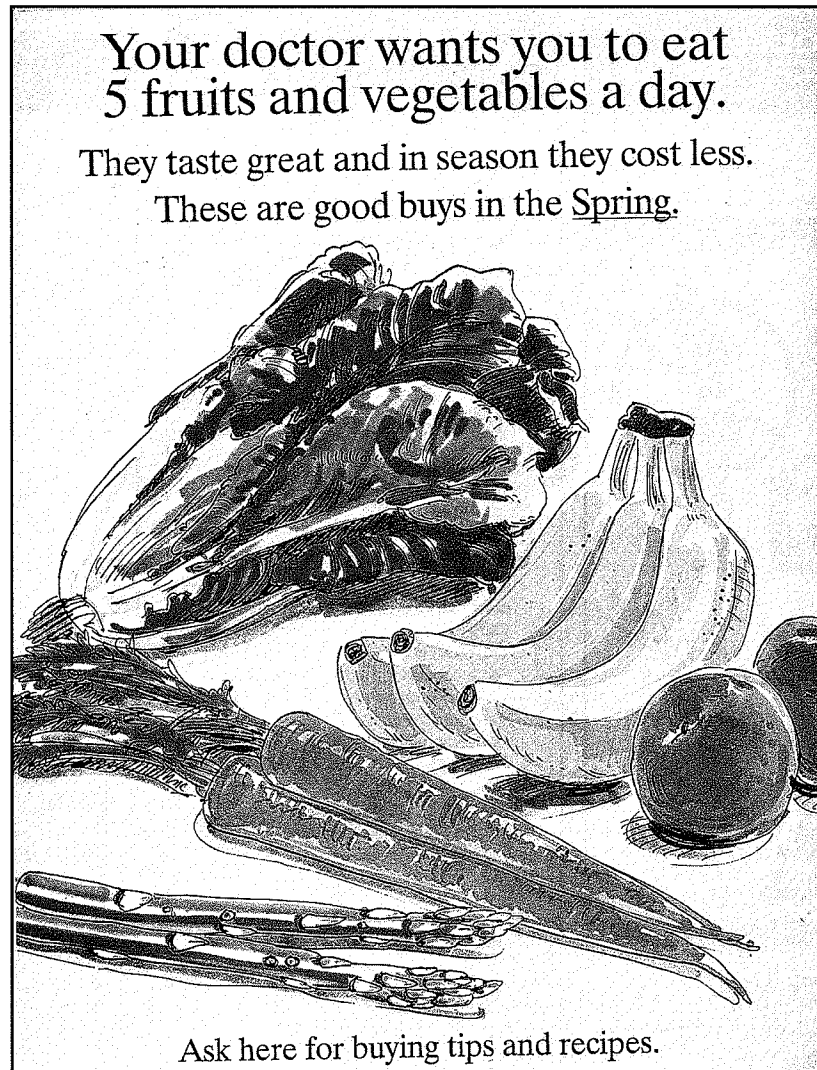
Step 1: Preparation

The objective of the material

Sometimes this task is easy because the objective is clearly stated in the title in easy-to-understand language. However, sometimes you may have to study the material to decide on the objective.

FIGURE 10-1

Poster on nutrition for cancer prevention. Objective of message: to motivate people to eat five fruits and vegetables every day. (Source: National Cancer Institute, Branch of Special Populations, Nutrition Project, draft poster, 1992)



Objectives can be stated in different terms, i.e., behavior, motivation, or knowledge. The substance of the testing flows from the objectives (purpose). The objectives also serve as a guide in the evaluation of what should be revised when the responses have been compiled. Save yourself considerable time and effort by having as clear and accurate a statement of objectives as possible. So that you might see how much objectives can differ, two examples are shown. Figure 10-1 is a nutrition poster for motivational purposes.

Figures 10-2 through 10-5 show a typical threefold pamphlet. The cover gives the subject, osteoporosis; the inside folded page tells you where you can be tested; and the back cover gives the name of the medical institution: Queens Medical Center. The educational objectives of this pamphlet are to (1) create an awareness of the seriousness of osteoporosis among women at risk; (2) tell what the patient can do to cut her risk of getting osteoporosis; (3) motivate her to take action.



FIGURE 10-2

Front cover. (Source: Osteoporosis and You. Queens Medical Center, Honolulu, HI)

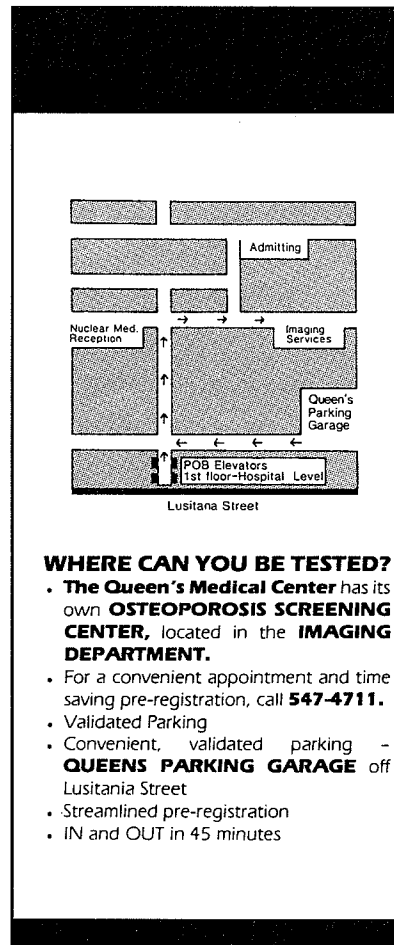


FIGURE 10-3

Inside fold.

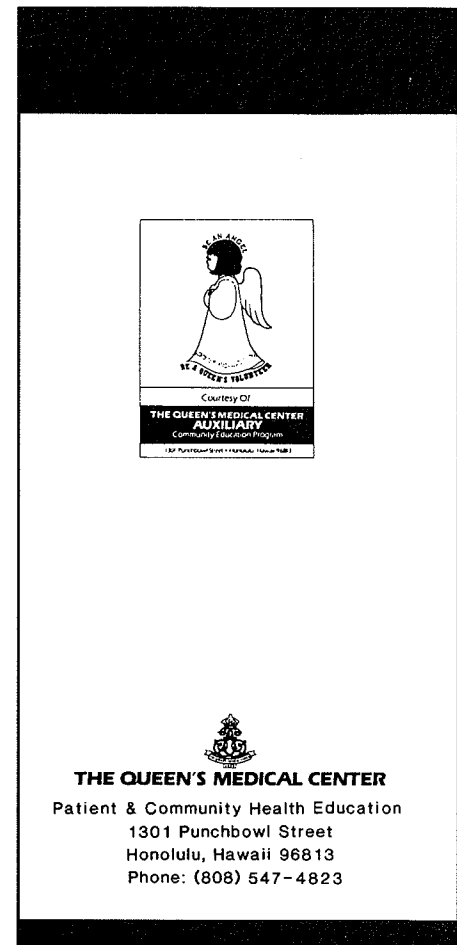


FIGURE 10-4

Back cover.

Key points and likely trouble spots

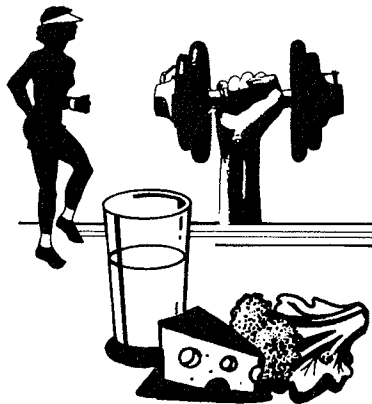
Include on your list of key points only those essential to carrying out the objectives of the material. Not every sentence or every piece of artwork needs to be tested. By identifying the key points you are singling out those parts of the material that need to be tested (perhaps three or four key points that explain the objectives). Give priority to the actions or behaviors the patient needs to carry out. These are examples of key points:

1. FIGURE 10-1: poster on nutrition for cancer prevention:
 - Your doctor wants you to eat five fruits and vegetables every day.
 - Identify fruits and vegetables pictured.
 - Fruits and vegetables taste great; they cost less in season.

WHAT IS OSTEOPOROSIS?

OSTEOPOROSIS is a condition in which there is thinning of the bones because of loss of calcium. This increases the risk of breaking bones of the spine, wrist and hip areas. It is often recognized by a curving of the upper spine, commonly known as "hunch back."

- One out of every four American women is affected by it.
- **80%** of people with broken hips have **OSTEOPOROSIS**.
- **20%** of these people will **die** from complications within three months.
- It is a **SILENT DISEASE** because it is not discovered until a broken bone occurs.
- It **CANNOT** be **TREATED**, but it **CAN** be **PREVENTED** if calcium loss is found early.

**WHAT ARE THE RISK FACTORS FOR OSTEOPOROSIS?****RISK FACTORS THAT YOU CAN CHANGE****• NUTRITIONAL FACTORS**

- Calcium Deficiency
- Vitamin D Deficiency

• BONE ROBBING HABITS

- Too much caffeine
- High protein diet
- High fiber foods
- Too much salt
- Too much alcohol
- Physical inactivity
- Smoking

RISK FACTORS THAT YOU CANNOT CHANGE

- **RACE** (Caucasians and Orientals are more prone to get osteoporosis)
- **FAMILY HISTORY** of Osteoporosis
- **MENOPAUSE**
- **SMALL, FINE BONES**
- **ALLERGY** to milk and milk products

HOW IS IT FOUND?

OSTEOPOROSIS can be identified through a simple and painless **bone density scan** (photon absorptimetry).

- This test can show as little as 1% bone loss.
- It takes less than 30 minutes for the scanning process.

Regular x-rays can detect osteoporosis, but only in its **ADVANCED STAGES**.

HOW CAN YOU PREVENT OSTEOPOROSIS?

- Eat a balanced diet from each of the four food groups:
 - milk
 - meat, poultry and fish
 - vegetables and fruits
 - breads and cereals
- Reduce your intake of alcohol and caffeine.
- Stop smoking.
- Exercise regularly. Do weight-bearing exercises such as running, walking, jogging, bicycling or hiking.
- Avoid stress.
- Ask your doctor about **ESTROGEN REPLACEMENT THERAPY (ERT)**.
- Make sure you get enough calcium and Vitamin D.
 - Eat foods rich in calcium, such as:

FOOD	MEASURE	CALCIUM CONTENT
Beans - canned	1 cup	138-159
Broccoli - cooked	1 cup	136
Cabbage - cooked	1 cup	140
Cheese - cheddar	1 oz.	213
cottage	1 cup	212
Ice Cream	1 cup	194
Milk - skim	1 cup	296
Salmon - canned	½ cup	170
Sardines - canned	2 oz.	261
Taro leaves - cooked	1 cup	178
Tofu	¼ block	252
Turnip greens	1 cup	267
Yogurt	1 cup	272

FIGURE 10-5

Most of the content is in the centerfold, which addresses osteoporosis, the risks, and how to prevent it.

2. **FIGURES 10-2 through 10-5:** a threefold pamphlet on osteoporosis:
 - Understanding what osteoporosis is.
 - Identifying risk factors you can change.
 - Understanding what to do to prevent osteoporosis.
 - Knowing how to detect it.

ARE CERTAIN WORDS LIKELY TO CAUSE PROBLEMS?

To identify potential trouble spots, look for words, phrases, and illustrations that must be understood if the reader/viewer is to get the key points you've written out. For example, if a key point is about diet, include a question to ask what the word tells you to do. For many people it means a two-week semi-starvation period. To a nutritionist it may mean a lifelong meal plan.

Words that express a concept, category, or value judgment are potential trouble spots (see Chapter 6 for examples). They may not be perceived by

patients in the same way that you perceive them. Examples of the kinds of questions that can be asked to determine understanding are given in Table 10-1. The purpose of the question or the reason for it are given on the left side and the sample questions are on the right side.

WILL THE ARTWORK (VISUALS, GRAPHICS) HELP OR CONFUSE THE KEY POINTS?

Artwork needs to be tested. Consider the following sample questions (as relevant for the particular material):

- Let's look at the cover. What catches your eye?
- What do the pictures tell you?
- What do you think of the color?

LAYOUT: DOES THE READER HAVE TO LOOK IN SEVERAL DIRECTIONS TO FOLLOW THE MESSAGE?

Poor layout can create comprehension problems. For example, going to one part of the page for one piece of information, then moving up or down the page like tic-tac-toe to get to the next point is hard for poor readers. They lose their place and may decide to quit (see Chapter 7).

Questions for the interview

Use open-ended questions, i.e., "what," "where," "when," "how," and "why" questions instead of questions requiring answers of "yes" or "no." These questions are best for identifying the specific trouble spots in the instruction. Establish a neutral tone to eliminate bias:

- *Neutral question:* Do these people look like anyone you know?
- *Biased question:* Don't you think these are good pictures?

TABLE 10-1

Examples of different kinds of questions to determine understanding of commonly used words and phrases in health care instructions

PURPOSE FOR THE QUESTION	EXAMPLE OF QUESTIONS (FROM DIFFERENT KINDS OF INSTRUCTIONS)
Testing individual words	1. The word <i>avoid</i> means different things to different people. What does the word tell you to do?
Obtain an example to determine understanding of the context of the word	2. What does the pamphlet mean when it says to eat balanced meals? For instance, what would you eat for lunch to have a balanced meal?
Distinguishing key details	3. What do these numbers for blood pressure tell you?
Ask for behavior information when testing a list of signs and symptoms	4. What kind of things might go wrong with the baby that would tell you to take the baby to the doctor?

HOW MANY QUESTIONS SHOULD YOU ASK?

For short pamphlets, posters, videotapes, and audiotapes a total of about 10–15 questions should be sufficient. For longer material, try to limit the total to about 20 questions.

WHICH QUESTIONS SHOULD YOU ASK FIRST?

Begin with an open-ended question about comprehension. Use this or a similar question: "Tell me in your own words, what is this all about?" You want to find out if the respondent has the sense of the instruction. It is important to know if the person is able to tell you the main theme or purpose of the instruction. This is as important as the details.

DESIGN OF SPECIFIC TYPES OF QUESTIONS

- **SELF-EFFICACY:** Questions that ask, "Tell me, how and when would you do this?" or "Would you need to know anything else before doing this?" are very useful in getting a sense of the person's confidence with the instruction. It also enables you to know what additional help or information needs to be added.
- **CULTURAL ACCEPTABILITY:** To help bring out any different perceptions of what is being shown use a question such as, "Is this ____ okay for showing a family like yours? (or friends of yours?). Then follow with a question such as, "What might be a better way to show ____?"
- **PERSUASION:** Questions such as, "Do you think your friends and neighbors would be willing to try this?" give clues as to how influential the message might be.
- **USE PROBE QUESTIONS TO ELICIT REASON FOR CHOICES.** Sample question: "Would your family or friends probably do ____?" Probe follows: (If either yes or no), "Could you tell me why?"

KEEP TRACK OF THE PURPOSE OF QUESTIONS

As you draft the questions, make a marginal note on the purpose that each question is to serve: i.e., attraction, comprehension, self-efficacy, cultural acceptability, persuasion. These notations help later when compiling the responses. They also serve as a reminder to be sure you've considered all the relevant purposes for the questions. Box 10-1 is an example of a questionnaire showing the purpose of the question on the left side and the questions on the right side. The order of the questions follows the flow of the pamphlet. This is the author's master copy.

CAN YOU USE THE SAME QUESTIONNAIRE FOR SEVERAL INSTRUCTIONS?

Yes and no. Yes for some of the open-ended questions about visuals, comprehension, self-efficacy, and persuasion. No for the specific words, behaviors, information details, artwork, layout, and cultural suitability that relate to a specific instruction.

In summary, questions are derived from the objective and the key points of the instruction that you determine at the beginning of the procedure. For

BOX 10-1

A completed questionnaire could look like this one for the osteoporosis pamphlet

FUNCTION	QUESTION
Comprehension	1. Tell me, in your own words, what is this all about? Anything else?
Attraction	2. Let's look at the cover. Would you want to pick it up and read it? (If no, could you tell me why not?)
Comprehension	3. What does the picture of the two women tell you?
Comprehension	4. Turn to inside (p. 1). What's a common name for osteoporosis? How serious is it? Do people die from it?
Comprehension	5. (bottom picture, p. 1) What does this picture tell you?
Self-efficacy	6. Do you think you could do what the picture suggests?
Self-efficacy	7. Here's a list of things some women do (Bone-Robbing Habits). Do you find anything here that you do?
Persuasion	(If yes) Would you change if you knew it might hurt you?
Comprehension	8. How could you find out if you have osteoporosis?
Comprehension	9. (go to next page) What can you do to keep from getting osteoporosis?
Comprehension	10. (Point to food list) What does this list tell you to do?
Comprehension	11. Where could you go to find out if you have osteoporosis?
Acceptability	12. Is there anything in this pamphlet that makes you uncomfortable or is not acceptable for you or your friends?
Persuasion	13. Do you think you might get a test now for osteoporosis?
Persuasion	14. Do you think your family or friends might get a test?

the osteoporosis pamphlet, the four key points determined earlier deal mainly with understanding about osteoporosis. Therefore, most of the questions focus on comprehension. In the poster example (Figure 10-1), recognition of the fruits and vegetables in the visual and eating five of them a day are the key points. If you were testing a procedure to be learned, then a demonstration rather than a questionnaire could be used to see if the patient could carry out the procedure using the set of instructions provided.

The results of testing the nutrition poster and the pamphlet on osteoporosis are given in the Evaluation section later in this chapter. Each interview took about 15 minutes.

A note of caution about self-administered questionnaires: They are much less reliable than interviews. For respondents who do not read well, the responses will have little validity. They tend to skip over items, leaving you with incomplete data. They may go back and change their answers as they get farther into the questionnaire.⁹ They often have someone else fill out forms for them, so there is no assurance that *your* respondent actually completed the form. Fur-

thermore, there is less "richness" in the responses because amplifying probe questions are not likely to be asked or responded to.

Train interviewers

For an instruction intended for in-house use at a hospital or clinic, you can conduct the interviews yourself. You can easily interview 10 or more patients in one morning. If you choose to have a larger sample interviewed, you may want to get help. If so, the interviewers will need a little training.

CONTENT OF INTERVIEWER TRAINING

The interviewers need orientation to the material to be tested and the particulars of your plan; you also need to train them in the unique characteristics of learner verification and revision. This is a fact-finding interview, not an instructional session. Therefore, record verbatim answers without trying to paraphrase them.

Training with role-playing could be done in an hour or so, depending on the experience of the interviewers. Some interviewers prefer to work in pairs: one interviews and one records. Additional tips for interviewers are in Appendix D. Appendix D also includes a questionnaire for the interviewers to evaluate their experience.

Plan the sample and select test sites

The nature of the message may appear to dictate the gender of your respondents (i.e., prostate surgery for men and OB/GYN for women). However, the authors suggest including a sample of both men and women for most tests. The influence of the other gender can be a force in carrying out the instruction.

For example, in testing a narrative instruction about two women losing weight, male respondents expressed considerable interest in knowing what kind of food habits were being promoted. They wanted to reinforce and support the efforts of the women.

SIZE OF SAMPLE:

As mentioned earlier in the Overview, learner verification and revision is formative research, so large samples are not needed. You may need to go beyond the 30–50 sample for national distribution and the 10 for local use for the following reasons:

- The length of your material may require a larger sample: Long booklets and long videos increase the likelihood of people missing information, especially near the end. A total of 50 tests is sufficient to pick up what some people may miss.
- The span of cultural diversity desired may require a larger sample: Factors to consider include inner city versus rural; country of origin, especially within the Hispanic culture, because Mexican, Puerto Rican, Central and South American cultures vary markedly. Differences can vary as much between tribal groups (i.e., Native Americans) as between people of different racial backgrounds.

SELECT TEST SITES

Sites may be hospitals (inpatient or outpatient) clinics, health departments, senior centers, adult basic education classes, or other locations where the intended audience is likely to be found. Other locations include central location intercept interviews, theater testing, and gatekeeper reviews. Comparative advantages of these various locations are discussed in recent low literacy and health education program guides.^{10,11}

A note of caution: If you delegate testing to subcontractors or to others, make certain the patient samples are drawn from the intended low literacy audiences. For example, community adult literacy programs are appropriate. The authors have had experience with "low literacy" samples taken on college campuses. Do not rely on entry-level unlicensed personnel or clerical staff as substitutes for your intended audience. They are likely to be more familiar with health care terms and jargon.

Step 2: Interview respondents

Tips for interviewers

1. There are no right or wrong answers. This is a fact-finding interview, not an instructional session.
2. People with low literacy skills often lack fluency in vocabulary. Try not to prompt the respondent. Broken sentences with "he" and "she" (unidentified) are common.
3. Gentle refocusing of attention back to the test material is often needed.¹² For example, we had a client tell the story of his brother's leg amputation instead of responding to a direct question about the signs of high blood sugar in a diabetes pamphlet.
4. The introduction of the interview is important. "Would you help me?" at the end of the introduction sets the stage and creates a mood for cooperation and partnership. The authors have used an introduction like the following:

"Hello. I'm Ms/Mr. _____ working here at the clinic on some new health instructions. We want them to be attractive, useful, and easy-to-read. I'd appreciate it if you'd read this pamphlet. When you've finished I'd like to ask you some questions to see if we got the important points across. This pamphlet can still be changed, so your opinion can make a difference. There are no right or wrong answers. Would you help me?"

Most people enjoy having a professional person ask for their opinion and will give time for the interview. Respondents are often quite willing to give advice on how to improve the visuals. The authors have found that clients at clinics, hospitals, senior centers, etc., are willing to be interviewed on a voluntary, nonpaid basis.

5. Test in the same language used in the instruction. For example, don't substitute an English version if the instruction is going to be used in another language. Each language has its own speech patterns, idioms, metaphors, and thought patterns.

An Alternative Method (used by AHEC, Biddeford, Maine)¹³

A combination of individual and group testing methods has also proven effective in assessing short instructions such as single-sheet, onefold pamphlets. The following example illustrates this dual testing approach and how to do it using the literacy, health, and education resources within the community. Salient characteristics of this approach are:

1. Individual assessment by a written checklist, customized for the pamphlet
2. Group interview to obtain additional responses about comprehension, self-efficacy, persuasion, and to obtain suggestions to improve the material (standardized questionnaire for group interview)
3. The use of adult basic education or other specific group resources for leaders and for target audience

Method: a two-part process:

1. Individual assessment (via a checklist)
2. Group interviews

Who conducts it: collaborative learner verification and revision testing with adult basic education and health care professionals

Small group setting: 8–10 adults

Two leaders: one from the health field; one from adult basic literacy field

Time: 1–2 hours total (including both Parts 1 and 2)

Target audience: adult basic education students (method has also been used with Women Infant Children Program, Head Start, drug counseling units, and select patient groups)

Materials needed

FOR INDIVIDUAL ASSESSMENT FOR EACH RESPONDENT:

1. Draft copy of new pamphlet (collected later along with completed checklist)
2. Customized checklist designed to determine how well the respondent understands the three or four key points of the pamphlet (sample: Fig. 10-6. Author of pamphlet develops checklist in collaboration with literacy/health professionals.)
3. Pencils

FOR GROUP INTERVIEWS BY LEADERS

1. Draft copies of new pamphlet
2. Standardized discussion guide

PART 1: Individual responses with written checklist:

- All respondents in the group are asked to read the draft pamphlet by themselves.

- Upon completion of the reading, a checklist is given to each person to complete without referring to the pamphlet.
- To test their remembering the information, the respondents check boxes, circles, or underline answers. Language on the checklist is the same as in the pamphlet. This is based on the assumption that if they could read the words in the booklet, they could also read the checklist. Leaders collect unsigned checklists.

Figure 10-6 is a partial copy of a checklist used for a pamphlet, "Good News for Older Smokers."

FIGURE 10-6

The checklist keeps attention focused on what the pamphlet says. (Source: Over 60 Health Center Smoking Cessation Program, 1860 Alcatraz, Berkeley, CA 94703)

GOOD NEWS FOR OLDER SMOKERS

After you have read the booklet, please put it aside and answer these questions. We want to see if the booklet was clearly written. This is not a test of you—it is a test of the booklet.

Please put a check in each box that tells you something that you read in the booklet.

If you stop smoking, you will:

- Cut down on the risk of stroke or heart attack.
- Cut down on colds.
- Save money.
- Feel better about yourself.
- Not gain weight.
- Smell better.

People smoke more:

- The older they get.
- When they do things like driving, watching TV or telephoning.
- When they are bored, lonely or angry.
- When they are away from home.

Put a check on the things the booklet suggested you do instead of smoking:

<input type="checkbox"/> Close your eyes and take ten deep breaths.	<input type="checkbox"/> Eat a piece of fruit.
<input type="checkbox"/> Listen to music and sing along or dance.	<input type="checkbox"/> Go fishing
<input type="checkbox"/> Chew gum.	<input type="checkbox"/> Drink a glass of water.
<input type="checkbox"/> Brush your teeth.	<input type="checkbox"/> Take a walk.
<input type="checkbox"/> Bake a cake or pie.	
<input type="checkbox"/> Call someone on the phone.	

PART 2: Group interviews using a standardized guide such as the following:

Questions for Group Review

These questions are discussion starters. You may need to probe for more specific information, depending on the answers to these kinds of general questions. Have a colleague record responses and/or use a tape recorder.

1. What are some words you would use to describe this pamphlet?
2. Is there any new information in this pamphlet? If so, what?
3. Is the information doable? That is, could you use the ideas in your own life? If not, what doesn't make sense or doesn't seem useful?
4. Would you be willing to try the ideas? Why or why not?
5. Are any words hard for you? Which ones?
6. How do the pictures help get the message across?
7. Is the print big enough? Too big?
8. Can you think of ways this pamphlet could be improved?

Summary of Parts 1 and 2: The objectives of the material and the key points must be identified regardless of what interviewing method you use. It is also important to try to identify the problem words, artwork, and layout for each instruction.

The choice is in the selection of the interviewing method. Should you use a personal interview one-on-one method? The advantages of one-on-one are:

1. You can carry it out with a few patients or clients in an office, in a clinic, on the street, or wherever the setting permits.
2. It offers privacy and confidentiality for the respondent.
3. It offers opportunity for in-depth respondent replies and for probe questions, and provides quantitative data on the responses.
4. There is great flexibility for timing when interviews are to be conducted.
5. It is suitable for assessing material of any length, in any medium.

Should you use the interview/group discussion method? The advantages are:

1. Responses from the group can trigger additional information that may clarify or amplify points.
2. It offers group reaction and/or support for thoughts and ideas.
3. The group can be constructed to meet certain specifications, i.e., randomized or selected.
4. Evaluation and assessment of changes for revision may benefit from the group leader's interpretation.

Whatever method or combination of methods you choose, by all means verify the suitability of the material with your audience.

Step 3: Evaluate responses and revise

Tabulating responses

For small samples: A simple tabular form may be sufficient. Displaying the responses to each question in tabular form is helpful because you can quickly spot problems with the material. A series of partially correct or wrong responses to a question often becomes evident with as few as 4 or 5 responses tabulated.

For large samples: See Appendix D, Figure D-1: sample computer spreadsheet.

Evaluating responses

As Wright points out, not only is there no magical figure that can be pinned on a text as some sort of seal of approval, but it is clearly meaningless to look at average figures for the total text, such as a 15-percent error rate. There are very different redesign implications depending on whether the problems occur scattered throughout the material, whether they are localized, and the level of confidence you need in having people understand the message.¹⁴ For example, missing a descriptive passage is not as significant as missing the dosage for a medication.

The tabulated data allow you to evaluate the responses in terms of each question, as well as in terms of each respondent. You can evaluate each question by counting the numbers of responses that were correct, partly correct, and wrong. This simple evaluation is often quite revealing.

When you evaluate by respondent, you may find that some respondents give wrong responses to most of the questions. What is it about these respondents that may be the cause of their not getting it? Both cuts of the data can be useful. Evaluations can also be made in terms of the function of the question, i.e., comprehension, acceptability, etc.

These different cuts of the data can uncover unsuspected problems. For example, the responses may show that most people understand the message and find it culturally acceptable. However, a self-efficacy question may show that the respondents don't believe they could do what the instruction asks of them. This finding could lead to a suggestion to retain the existing content, but to repackage it into a number of small, easy-to-do steps. Or perhaps it may point to the need to add supporting testimonials of others who adopted the behaviors called for in the instruction.

Cross-correlations between the respondents' demographics and the questions with incorrect responses can also be revealing. For example, one may find that nearly all of the incorrect responses to a question were made by respondents over 60 years of age. Such a finding may lead to an assessment of the readability of that part of the text in the instructional material because, as noted in Chapter 1, people over age 60 have a much higher incidence of functional illiteracy. Perhaps they couldn't read that part of the material!

Revising the instruction

How should you decide from the learner verification and revision responses whether or not changes are really needed? How many wrong answers warrant the decision to change?—a step that could have significant cost impact if the instruction is in final form ready for production. Make the decision based on the following criteria:

1. The importance of the wrong responses in terms of the purpose and key points previously identified for the material.
2. The number of respondents who got it wrong.
3. The cultural acceptance and self-efficacy responses: if either of these two factors had a high number of wrong or negative responses, the material should be revised.

It would be convenient to have threshold numbers to revise or not revise for the criteria above, but the threshold depends on the importance of the information for the use of each material. For example, where the information deals with safety of life there should be a zero or near zero tolerance for incorrect responses.

Even if only 5 percent of respondents replied incorrectly to a comprehension question on a key point, a revision or a reassessment should be made. On the other hand, if the material assessed is intended to serve a multi-cultural population, some cultural mismatch is to be expected and a higher tolerance (percentage) of unfavorable responses may be acceptable (perhaps 10 percent) without making any change.

To sum up the evaluation: classify passages of the text in terms of the tolerance of misunderstanding that will be accepted. If the differences are with nice-to-know but not critical information, such as statistics, then it may not be cost-effective to make expensive revisions. On the other hand, if there is misunderstanding of the key points of the instruction, extensive revision may be needed.

Although the immediate results of evaluation are diagnostic for that specific instruction, there is a long-term advantage to keeping track of these problems so that you can avoid them in the future. These problems can range from graphics to vocabulary and it is not easy to generalize after assessing only one instruction. However, over time after learner verification and revision assessment of several materials, patterns of problems may become evident and these may be dealt with more systematically for future materials.

Examples of results from learner verification and revision testing

Three examples provide a range of data to show what you might expect from testing typical health instructions.

Example 1: Box 10-2 is from a pamphlet urging a change of diet to reduce cancer risks by eating cruciferous vegetables. "Cruciferous" was reworded to "in the cabbage family." However, many people still had no idea what that meant. They couldn't respond to this question.

BOX 10-2

Sample of test check list on nutrition pamphlet. (Source: The Good Life, American Cancer Society, 1599 Clifton Rd. NE Atlanta, GA 30329)

CIRCLE ALL THE FOODS IN THE CABBAGE FAMILY:

cauliflower	brussel sprouts	turnip greens
carrots	celery sticks	chic peas
lettuce	kale	cole slaw

Recommendations for revision: The pamphlet needs to have visuals and greater detail of the size, shape, and texture of vegetables to help people recognize "the cabbage family."

Example 2: Figure 10-1, the poster, "Your doctor wants you to eat five fruits and vegetables a day." Findings are organized according to the key points tested:

1. Your doctor wants you to eat five fruits and vegetables every day.
2. Identify fruits and vegetables pictured.
3. Fruits and vegetables taste great; they cost is less in season.

Findings: The "five-a-day" was well understood. However, the credibility of the message failed. Doctors are perceived as persuading people to change behavior for health reasons, not for taste and cost. It doesn't make sense. Only 51 percent thought that it was a persuasive message. The poster is perceived more as a grocery ad than as advice from doctors.

"Identify the fruits and vegetables pictured": A large number, 88 percent, did not recognize romaine lettuce. Some thought it was a type of lettuce, but they "ate iceberg." Others thought it was bok choy, broccoli, or kale. Some confused asparagus with celery, but the majority who recognized asparagus were emphatic in saying they would not eat it.

Recommendations for revision: Some major revisions are indicated by the confusion with the key points:

1. Change the subtitle about taste and cost to conform with expectations about doctors' advice, i.e., "Vegetables cut your risk of cancer."
2. Change romaine lettuce to a more familiar vegetable.
3. Change asparagus to one that is better liked.
4. Label each vegetable and fruit

Example 3: Figures 10-2 through 10-5, the pamphlet, "Osteoporosis and You." Findings are organized according to the key points tested:

1. Understanding what osteoporosis is
2. Identifying risk factors you can change
3. Understanding what to do to prevent osteoporosis
4. Knowing how to detect it

Findings: The concept of osteoporosis and risk factors are only partially understood. The following range of responses shows some confusion and an association with *parts* of the explanation given in the pamphlet: "It's about bone disease"; "a disease of the joints"; "I didn't understand it"; "foods you *should* eat"; "people with broken hips can die"; "osteoporosis, bones break easily."

The term "hunchback" is a little better understood: "thin bones or something"; "a bone disease;" "broken bones"; "arthritis;" "it's hunch back."

People understood the preventive behaviors better than the concept of bone thinning and loss of calcium. Examples of their responses are: "take calcium"; "change diet"; "exercise"; "eating habits, exercise"; "eat foods high in calcium."

People understood how osteoporosis could be detected. All understood that you went to a doctor for a test. Forty percent knew the test procedure was either scan or x-ray and another 40 percent knew you went to Queens Hospital.

Recommendations for revision: Responses indicate a need for redesign and revision changes:

1. Shift the concept to "hunch back." Use the Health Belief Model to reorganize the sequence of information. Emphasize "you." Either drop or explain "bone thinning and robbing" with examples.
2. Write "hunch back" as a caption and emphasize with an arrow.
3. One picture of the hunchback on the cover makes the message clear.
4. "Chunk" the long lists of preventive actions to understand easier.
5. On the diet list, rank the high-calcium-content foods first.

Advice: For already published material that will not likely be revised soon, consider writing an insert sheet that clarifies or simplifies the information. It can also provide additional advice.

Terminating the revision process

Deciding when to terminate the revision process is really an arbitrary decision. It is well to keep in mind that several drafts are likely to be tested before arriving at a satisfactory instruction. A rule of thumb is to test major redesign features after each draft. Small wording changes may not be necessary to retest.

Often several people or a committee are involved in the design and/or approval process for materials. In these circumstances, let the learner verification and revision data serve as your verification. Many health care professionals do not understand the kind of changes necessary for low literacy patients. So when you present your draft along with the results of your testing, the information speaks for itself.

Learner Verification and Revision for Questionnaires, Audiotapes, Videotapes, and Demonstrations

Questionnaires

Questionnaires are increasingly used for behavioral research in health care for minorities as well as for health promotion programs in smoking cessation, cholesterol control, etc.

We recommend two steps in verification of questionnaires:¹⁵

1. Test the questionnaire with a small sample of the intended audience to verify that they understand the questions the way you intend:
 - (a) Not every question is tested, but key questions need to be identified.
 - (b) Questions like these help to clarify the intent of the question:
 - What did the question mean to you?
 - (when person hesitates) What made it hard for you to answer?
 - What further ideas do you have that were not brought out by the question?
 - How would you ask the question?
 - How do you feel about questions that you answered "I don't know"?

2. Obtain feedback from interviewers: the interviewer also provides valuable information. Some of these questions could help improve your planning as well as programming:
 - What problems did you have in locating respondents and in interviewing?
 - What points seemed to cause embarrassment or resistance?
 - Where did you have trouble maintaining rapport?
 - Were the respondents bored or impatient?
 - What questions brought forth interest in further information?
 - Did you have enough space for recording answers?

Audiotapes

Planning: Use the same planning steps described earlier in this chapter: i.e., identifying the key points, writing the questions. Unique to audiotape testing are the following elements:

- Is the pacing of the story or the information about right? "Did you slowly get bored?" "Was it easy to follow the tape?" Did people talk too slow, too fast, or about right?"
- Is the story culturally suitable? "Did the people sound like people from around here?" In testing a tape produced in another language, for example,

Spanish, you want to know if the accent, vocabulary, and examples used in the tape are suitable for your audience.¹⁶

- Is the audio reproduction of good quality? "Could you hear them okay?"
- If sound effects were used, "Could you tell what the sound meant when . . . ?"
- If music was used, "Is this the kind of music you like?"

Interviewing: Ask the client to listen to the tape and essentially use the same introduction as you would for text, except the client listens to the tape and you ask questions afterward. A comment from one patient was, "When I read, I just go on and on and I don't know what I've read. But with a tape, I listen right along with people and it's easier."

Video

Planning: Use the same planning steps described in this chapter, i.e., clearly state objectives, identify the key points, and write the questions. For video, group interviews are probably more efficient than individual interviews. Unique features of testing video are:

- In the draft stage, use a set of story boards to test the key points. The client looks at the story board while you read the script or have a tape recorder play the sound for you. How well do the video and audio synchronize for the learner? Does the video match the audio? Does it move too fast or too slowly?

FOR VIDEOS ON THE MARKET:

- Preview a video two or three times to be sure you have identified all the key points.
- Consider asking questions about any text shown. Sometimes the text is shown for only a few seconds. Did the text stay on the screen long enough for you to get it?
- Cultural appropriateness is indicated by dress, appearance, speech, background setting, and mannerisms. Do these people look like your friends or family?

Interviewing: Introduce the video by describing what it is about, who the characters are, how long it is, and any special details that you want respondents to look for, i.e., steps in a procedure and use of color. Show the video and then ask the questions as you would in a group discussion.

Demonstrations

Planning: The objective of the demonstration and the key points needed for comprehension need to be clearly identified ahead of time.

Demonstrating: Introduce the subject, tell what you are going to do, and tell the person/group that you are going to ask each of them to do the procedure immediately after you finish.

Individual demonstration: Prepare the same setup the way you had it before you started. Keep your copy of the procedure with you. Ask the person to go ahead and carry out the procedure the way you did it. Make note of where the person bogs down and has trouble remembering what to do next. The hesitations and slowing down tell you these are trouble spots. If possible, do not interrupt until the person is through.

Demonstration for a group: If the subject is suitable, have the group divide into pairs and demonstrate to each other. Again, make note of where people seem uncertain or hesitate to take the next step. Conduct a discussion afterward on what they found easy, where they experienced trouble, and what additional help they feel they need.

References

1. This chapter updates Chapter 9, Pretesting, in the 1985 edition of this book.
2. Veermeeersch JA and Swenerton H (1980): Interpretations of nutrition claims in food and advertisements by low-income consumers. *J. Nutrition Education* 12(1):19–25 as contained in Rudd, et al. (January–February 1993): Developing written nutrition information for adults with low literacy skills. *J. Nutrition Education* 15(1): 11–16.
3. Samora J, et al. (1961): Medical vocabulary knowledge among hospital patients. *J Health and Human Behavior* 2:83–92.
4. Larrabee P (1977): Masters thesis, Patients' understanding of vocabulary terms used in initial health assessments, University of Rochester, School of Nursing, Rochester, NY. Available on microfilm from University Microfilms International, Ann Arbor, Michigan, 48106, and London, England.
5. Selman S (1994): Personal communication.
6. Rudd J, et al. (January–February 1993): Developing written nutrition information for adults with low literacy skills. *J Nutrition Education* 25(1):11–16.
7. Hosey GM, et al. (1991): Designing and evaluating diabetes education material for American Indians. *Diabetes Educator* 16(5):407–414.
8. Stanton M (1989): Personal communication.
9. Bertrand JT (1978): Communications Pretesting, Media Monograph 6, Communication Laboratory, Community and Family Study Center, University of Chicago, 1411 E. 60th St., Chicago, IL 60637.
10. Beyond the Brochure: Alternative Approaches to Effective Health Communication (1994): AMC Cancer Research Center, Denver, CO, and the Centers for Disease Control and Prevention, Atlanta, GA.
11. Making Health Communication Programs Work: A Planner's Guide (April 1992): USHHS, Public Health Service, Office of Cancer Communication, NCI, NIH Publication No. 92-1493.
12. Doak C, Doak L, Root J (1985): *Teaching Patients with Low Literacy Skills*. Philadelphia: Lippincott. See Chapter 1, The problem, pp. 7–8.
13. AHEC Office, University of New England, Biddeford, ME. Supported by AHEC and The Bingham Foundation, 1990–1993.
14. Wright P (1985): *The Technology of Text*, DH Jonassen (ed), Vol. 2. Englewood Cliffs, NJ: Educational Technology Publications. See Chapter 18, Is evaluation a myth? Assessing text assessment procedures.
15. Selltiz J, et al. (1966): *Research Methods in Social Relations*. Holt, Rhinehart and Winston New York, NY, p. 551.
16. The authors tested a dialogue tape recorded in Spanish with one speaker from Columbia, South America, and the other from Puerto Rico. The largely Puerto Rican audience commented immediately that the Columbian "doesn't talk like us." The different accent created dissonance and the message needed to be retaped with two Puerto Ricans.