Patient Simulators in Teaching Patient Education Skills to Family Practice Residents

Susan Callaway, MD, Donald A. Bosshart, EdD, and Alice A. O'Donell, MD
Galveston, Texas

The University of Texas Medical Branch Family Medicine Residency includes in its curriculum the use of interviews with simulated patients for the teaching of patient education skills. Success with simulated cases requires careful programming of the simulator, realistic situations, and objective evaluation and feedback for the residents. This paper describes the "patient education guidelines" which we used in programming a simulated patient, as well as specific objectives for the content of the residents' interviews and a rating form for evaluating the educational process used by the residents. The interviews with a simulated patient were video taped for review by faculty and residents, using the content objectives and the rating form as aids in the feedback session.

The Family Medicine Department of The University of Texas Medical Branch (UTMB) recognizes as one of the requirements of a family practice residency program some formal training in patient education skills. In cooperation with the Office of Research in Medical Education, curriculum materials are being developed both for the teaching of these skills and for evaluation of the effectiveness of the teaching. This paper will focus on the development and initial trial of a simulated patient exercise for the UTMB family practice residents. Much of this work expands on experience gained in teaching patient education skills to undergraduate medical students and to physician's assistant (PA) students. Procedures for designing and carrying out an exercise in patient education, including evaluation of the individual residents' performances, will be presented with some data showing the reliability and validity of the evaluation instruments.

From the Family Medicine Residency Training Program and the Office of Research in Medical Education, University of Texas Medical Branch, Galveston, Texas. Dr. Callaway is currently a resident at Methodist Hospital, Dallas, Texas. Requests for reprints should be addressed to Dr. Alice A. O'Donell, Department of Family Medicine, University of Texas Medical Branch, Galveston, Tex 77550.

Patient Education Skills

Patient education, as we see it, is the successful conveyance to the patient of information, attitudes, and physical skills germane to a given health problem. It differs from health education in being individualized and integrated into medical management. Parent or family education, to the extent that it relates to the patient in a medical context, would be considered a form of patient education.

In the course of most office visits, the physician spends appreciable time giving instructions to patients and answering their questions. The amount of time spent varies with the complexity of the disease, the education and experience of the patient, and the physician's experience. Efficiency and effectiveness require that the physician be able to assess educational needs, meet those needs appropriately, and determine the patient's progress.

For each specific health problem, there is a body of knowledge, skills, and attitudes required of any patient for successful management of the problem. These may be set forth as guidelines for patient education. We can write a set of guidelines for a given health problem, such as hypertension, which can then apply to any patient. Areas in which the patient's knowledge, attitudes, or skills do not meet the established guidelines are "educational needs" of that patient. Questions or concerns expressed by the patient may also constitute educational needs.

It was felt essential that the family physician have the skills to: (1) identify and give priorities to the various educational needs of an individual patient; (2) organize and present the factual information appropriate to a given health problem; and (3) evaluate whether educational needs of the patient have been met and whether there were adverse side effects of the education, such as a factual misunderstanding.

Teaching Approaches

Physicians at the postgraduate level were expected to possess both the factual information and the basic interviewing skills required to accomplish the above objectives. We designed an exercise to determine whether the residents were able successfully to integrate and use these skills and knowledge with a simulated patient. In this exercise, each family practice resident interviewed a programmed (simulated) patient. Each session was video taped for later review and feedback from faculty and the simulator. The residents have ample experience with such video taping and feedback sessions. They are encouraged to tape any patient encounter they anticipate will be troublesome for them and to obtain faculty consultation on the case via the video tape. In addition, earlier in the year, each resident had interviewed a simulated patient who presented as an unmarried college student who had just discovered she was pregnant. Approach and technique were discussed through a review of the video tape.

Table 1. Guidelines for Patient Education: Cholecystectomy

The patient should be able to demonstrate an understanding of the nature of his/her illness, its prognosis, and the nature and possible complications of the proposed therapy. He/she should demonstrate an ability to communicate questions and concerns to the physician.

Nature of the illness and its prognosis.
- Demonstrate a knowledge of the normal anatomy and physiology of the gallbladder.
  - Point out the location of the gallbladder and the normal direction of bile flow on an anatomical diagram.
  - Name two functions of bile (digestion of fats, elimination of wastes).
- Know reasons for having her/his gallbladder removed.
  - State her/his pathology in own words.*
  - State the two choices of therapy (medical or surgical) and the probable outcome of each (likelihood of recurrence >50% vs surgical complications < 2%).*

Nature and possible complications of proposed therapy.
- Demonstrate awareness of possible complications of cholecystectomy.
  - Name the two major complications which would require a second operation (common duct ligation, retained stone).*
  - Name three others which might be managed medically (infection, hemorrhage, bile leak).
- Demonstrate familiarity with goals of immediate post-operative management.
  - Adequate lung function.
    - Demonstrate "turn, cough, deep breath."
    - State the result of failure to clear the lungs adequately (pneumonia).*
    - State the effect of sitting and walking on lung function (deeper breathing).
  - Return of bowel function.
    - State the probable effect of eating or drinking immediately post-operatively, and its cause (vomiting because of inability to move food through the bowels).*
    - Explain the function of a nasogastric tube (remove normal stomach secretions, swallowed saliva, and air).*
    - Name the two signs of returning bowel function (passing gas, bowel movement).
  - Analgesia.
    - Know the major source of post-operative pain (muscle spasm).
    - Demonstrate abdominal relaxation.
    - Be aware that pain medications must be requested.*
    - Know reasons for obtaining analgesia (comfort and ability to accomplish other goals).*

Respond appropriately to an invitation for questions.*

*These are considered minimal objectives to be accomplished.

Table 2. Content Objectives for the Physician: Cholecystectomy

The physician should determine the patient's present educational status and knowledge as a basis for proceeding with specific topics. Areas to be covered in an educational encounter in preparation for a cholecystectomy include the nature of the illness, its prognosis, and the nature and possible complications of the proposed therapy. The patient should be given opportunities to communicate questions and concerns.

Assessment of educational status and present knowledge

Nature of the illness and its prognosis
- Normal anatomy and physiology of the gallbladder
- Reasons for performing this cholecystectomy

Nature and possible complications of proposed therapy
- Details of procedures to be performed
- Possible complications of cholecystectomy
- Goals of immediate post-operative management
  - Adequate lung function
  - Return of bowel function
  - Analgesia

Invitation(s) for questions and concerns

Evaluation of effects of his/her educational efforts

In designing this patient education exercise for the family practice residents, we built on experience gained in teaching physician's assistant students. Over the last three years, the UTMB Physician's Assistant Program has used eight different cases totaling over 75 simulated patient encounters for teaching patient educational skills. This experience has given insight into how to design the simulations, prepare the simulated patients, and provide feedback to the students.

We have learned that pertinent aspects of a regular care setting should either be duplicated or realistically eliminated. In a physician's practice, the educational process usually proceeds from the identification of the patient's problem. Ordinarily this is done by a physician who is familiar with the patient's history and physical findings. Identifying the problem may lead to a specific therapeutic goal (such as proper drug administration) or to the expression by the patient of less well-defined needs – questions about diagnosis, prognosis, or fears. Patient education is not usually performed in isolation from other aspects of health care, such as history taking and physical examinations. In attempting to evaluate performance in a single physician-patient encounter in a limited amount of time, we have simplified these conditions by the following steps:

1. Presentation of the case as that of a patient being admitted to the teaching service of an affiliated hospital or referred to the model clinic. The resident is provided with the initial work-up (history, physical findings, laboratory data, and x-rays if appropriate).

2. Selection of an illness or problem which has been completely defined by a previously completed evaluation. Residents are informed that the appropriate data have been collected and are reliable. Thus, there is no need to repeat or question the work-up, although a brief review of the history may be appropriate and the simulator is adequately programmed for this.

3. Deliberate programming of the person simulating the patient with some correct information, some misinformation, and some information gaps. This allows reproducible evaluation of the resident success in determining the patient's educational needs. In this way, the resident is free to: (a) fall

Appendix 1. Rating of Patient Education

Name of Physician or PA _____ Case _____

For each principle of Patient Education, check "yes" if the examinee followed the principle. Check "no" if he violated the principle. Check "marginal" if you are not sure, but think he violated the principle. Leave blank if you have no basis for judgment.

No	Marginal	Yes	
			Beginning of Session
[ ]	[ ]	[ ]	Puts the patient at ease
[ ]	[ ]	[ ]	Uses general questions as openers which will help him/her learn about the patient's needs
[ ]	[ ]	[ ]	Effectively moves into the "business" of education
			Middle of Session
[ ]	[ ]	[ ]	Appears interested (eye contact, body language, warmth)
[ ]	[ ]	[ ]	Uses summaries, reflecting back what the patient has said to let the patient know that he/she is actively listening and understanding
[ ]	[ ]	[ ]	Uses questions to clarify the patient's vague statements
[ ]	[ ]	[ ]	Helps the patient to focus on his/her feelings (emotions, moods)
[ ]	[ ]	[ ]	Adjusts the presentation to ensure understanding
[ ]	[ ]	[ ]	Asks clear questions of the patient
[ ]	[ ]	[ ]	Provides feedback to patient's responses
[ ]	[ ]	[ ]	Communicates at the patient's level (does not talk down to or above the patient, but talks with the patient)
[ ]	[ ]	[ ]	Uses words the patient can understand
[ ]	[ ]	[ ]	Checks patient's comprehension by asking questions or having patient actually engage in the activity to be learned
[ ]	[ ]	[ ]	Encourages the asking of questions
[ ]	[ ]	[ ]	Responds to the patient's questions appropriately
[ ]	[ ]	[ ]	Does *not* turn off the patient's desire to learn (eg, rejecting comments or non-verbal communication)
[ ]	[ ]	[ ]	Does *not* have distracting mannerisms
[ ]	[ ]	[ ]	Does *not* give false reassurance
[ ]	[ ]	[ ]	Obtains agreement for patient education (when appropriate)
[ ]	[ ]	[ ]	Enthusiastic about having patient reach the objectives
[ ]	[ ]	[ ]	Addresses appropriate objectives considering the patient/problem
[ ]	[ ]	[ ]	Presents only relevant material (does not overload with unnecessary information)
[ ]	[ ]	[ ]	Presentation clear to patient
[ ]	[ ]	[ ]	Material presented in an organized manner (sequence)
[ ]	[ ]	[ ]	Detects what the patient already knows and drops it from the presentation
[ ]	[ ]	[ ]	Information correct
[ ]	[ ]	[ ]	Is able to explain a point in several different ways (instead of one)
[ ]	[ ]	[ ]	Can relate material to the patient's particular situation
[ ]	[ ]	[ ]	Is flexible, not rigid in approach
[ ]	[ ]	[ ]	Is able to acknowledge the fact he/she does not have the answers to questions (whenever appropriate)
[ ]	[ ]	[ ]	Informs patient about the probable clinical course of the illness
[ ]	[ ]	[ ]	Prepares patient for anticipated problem or complication
			End of Session
[ ]	[ ]	[ ]	Makes a smooth transition, indicating to the patient that he/she is ready to begin terminating the interview
[ ]	[ ]	[ ]	States what he/she intends to do about the patient's problem
[ ]	[ ]	[ ]	Gives the patient an opportunity to ask questions
[ ]	[ ]	[ ]	Invites telephone questions or office visit
[ ]	[ ]	[ ]	Makes clear to the patient what will happen next

Comments:

into the trap of teaching information or skills that the patient has already attained; (b) overlook key misunderstandings that may affect the course of management; and/or (c) assume that the patient has reached certain educational guidelines which, in fact, he/she has not.

4. Restriction of the time of the interview to 20 minutes. This requires that the resident maintain control of the interview and set reasonable priorities. A prearranged signal is given to the resident as the time limit is approached, to allow an opportunity to demonstrate smooth termination of the interview.

5. Programming of the simulator with a fear or an emotional block. This allows observation of the resident's flexibility and success in monitoring his/her educational efforts in the individual case.

The case chosen for this exercise was elective cholecystectomy. This is the most common general surgical procedure performed in our hospitals, and moreover, the family practice residents had recently had experience with several such cases. In consultation with surgeons, anesthesiologists, and family physicians, a list of educational guidelines – that body of knowledge and skills needed by any patient for successful management of this problem – was drawn up (Table 1).

In developing the guidelines, we considered two broad topics – the nature of the illness itself and the nature of the proposed therapy. Under each topic, we detailed the areas we felt were important to any patient undergoing elective cholecystectomy. Where appropriate, we included answers: "Name two possible complications of cholecystectomy which might require a second operation (common duct ligation, retained stone)." It was then straightforward to program a simulator using these guidelines, giving the simulator correct information, misinformation, or no information at all on each listed area.

In practice, this list of guidelines could be used flexibly and to permit some realism in programming. The simulator actually had a friend who had recently undergone a cholecystectomy. We tailored our programming to the information (and misinformation) she had obtained from this friend. Another possibility would have been to have the simulator read about gallbladder disease in a popular magazine (such as *Reader's Digest* or *Today's Health*) and work from that base. The principle is the same: to give the simulator a set of well-defined educational needs, areas in which he/she does not meet the guidelines, in an objective and easily reproducible form.

Evaluation of Teaching Methods

This list of educational guidelines also became the basis of one of our evaluation tools for the resident's performance. We needed an evaluation method which focused on the resident's behavior rather than the patient's actual learning outcomes, since the effects of one resident's educational efforts with the same simulator cannot be separated from those of another. The patient education guidelines served as an outline of topics we felt the residents should cover during the interview; that is, they were the source of our objectives for the content of the interviews. The content objectives (Table 2) were written from the resident's point of view, taking into account specific aspects of our setting. For instance, we omitted a discussion of anesthesia from the resident's objectives, since in our hospitals the anesthesiologists are responsible for this.

We took these objectives, this time without specific details or answers, as a working list into the feedback sessions (in which the video tapes were reviewed). The content objectives were used as a basis for discussion, and were modified by input from the residents. We found, for example, that the residents placed more emphasis on the details of procedures to be performed than we had expected.

In addition to the content of their interviews, residents were evaluated by the faculty and simulator in terms of the educational process they used. A patient education rating form (Appendix 1) was developed for use with physicians and physician's assistants. It contains key physician behaviors that should occur during an educational session if that session is to be effective from a pedagogical viewpoint. The form has been found to be valuable in directing feedback around the general issues of whether needs are assessed, information transmitted, and whether the resident evaluated the patient's progress.*

Comment

Simulated patients can be used effectively to teach patient education skills to physicians in postgraduate training. Key aspects of a successful program are careful and reproducible programming of the simulator, the greatest possible realism in the programmed situation, and objective means of evaluating performance and giving feedback to the learner. We have developed patient education guidelines for a health problem which are used in programming the simulator. Accumulated experience has taught us to simplify the problem situation as much as possible while trying to reproduce an actual practice situation. Finally, we have developed content objectives for the residents and a reliable rating form for evaluating the educational process they use. By videotaping a simulated patient exercise and reviewing the tape with the content objectives and the rating form, we have direct and reliable evidence of the resident's comparative skills in patient education. These include identifying a patient's educational needs, communicating the relevant information, attitudes or skills, and evaluating the effects of the educational effort. Teaching efforts can then be focused on each resident's unique needs.

Suggested Reading

Barrows HS: Simulated Patients. Springfield, Ill, Charles C Thomas, 1971

Bosshart DA: Patient education in the physician-patient encounter. Galveston, Tex, The University of Texas Medical Branch, 1975 (video tape)

Gillum RF: Patient education. J Natl Med Assoc 66(2):156-159, 1974

US Department of Health, Education, and Welfare, Health Services and Mental Health Administration, Health Care Facilities Service: A Model for Planning Patient Education. DHEW Publication (HSM) 73-4028, Washington, DC, US Government Printing Office, 1972

*With physician's assistants, total scores on this form were found to be fairly reliable measures of performance (Pearson product moment correlations of .50 and .87 between two pairs of raters) that were correlated (Pearson product moment correlations of .65 and .88 $p<0.05$) with overall judgements of competence made on another form by the same raters.