

## **USING PATIENT SIMULATION TO FACILITATE STUDENTS' CLINICAL SKILLS**

Richard Dean, Ph.D.

Ohio University

Patient simulation was first written about by Howard Barrows in 1963. He devised a teaching approach that confronted beginning medical students with non-patients trained to perform as patients. He cited two primary benefits of this practice: (1) it provided patient assessment/management experiences to novice students at no risk to real patients and (2) it provided experiences with rare medical conditions.

Patient simulation has the potential to provide speech-language pathology students experiences managing the following rare conditions that are difficult to provide in the conventional university clinic setting:

- Global Aphasia
- Spasmodic Dysphonia
- Total Glossectomy
- Alaryngeal Speech
- Dysphagia
- Establishment of Feminine Vocal Traits in Gender Reassigned Patients

I have personally used patient simulation since the late 1980s for some part of the instruction in the following clinical courses:

- Disorders of Voice
- Adult Language Disorders
- Fluency
- Neuromotor Disorders
- Dysphagia
- Orofacial Disorders

- Augmentative Communication

This presentation will provide information on

1. Origin of patient simulation/problem-based learning
2. Personal motivation to use patient simulation
3. My use of patient simulation for four different instructional purposes.
4. In depth description of patient simulation as a primary component of problem-based instruction in dysphagia
5. Demonstration of 'virtual' dysphagia patient use in dysphagia management skill development

### **Patient Simulation and Problem-Based Learning**

Patient stimulation and problem-based learning were teaching innovations of Howard Barrows. He was the creator and author of books on both patient simulation and problem-based curriculums that he had applied to physician training in California in the 1970s. He later used them at McMaster University and Southern Illinois.

My initial exposure to patient simulation came while on sabbatical at the University of Virginia in 1988. I witnessed a program created by Chris Halpin, doctoral candidate in audiology, designed for the purpose of providing experiences with conditioned-oriented reflex testing using a virtual child. My second exposure to patient simulation came via a vicarious experience. I observed my daughter's reactions to treating simulated patients during her first year of medical school in 1990. Both of the experience impressed me with the value of the approach. Halpin demonstrated the value of exposure to patient management at no risk to a patient. My daughter's experience showed how seriously a student can take such an assignment and how real the experience can be for facilitating problem solving.

I used patient simulation in graduate courses in fluency, adult language, and phonation disorders to provide more direct experiences with the assessment and management of simulated adult patients, patients less likely to be encountered in practicum or externship experiences. My motivation was to accomplish two goals: (1) increase students' insight in the personal experiences of such patients and (2) provide students some practical experience managing patient types that were not well represented in practicum experiences at our clinical sites.

Students were assigned to simulate adult patients for their peers to assess and/or apply and practice rehabilitation techniques. I used patient simulation for four different instructional purposes.

1. To provide exposure to communication disorders rarely present in our clinic.
2. To provide the opportunity for all class members to use tests designed for special population (e.g. aphasia and stuttering).
3. To gain experience as a member of an interdisciplinary team in managing clients.
4. To gain experience with dysphagia patients normally unavailable for assessment outside a medical environment.

There are several sources for simulated patients. They include

- Trained adults or former patients [patient instructors]
- Class instructor
- Members of the class
- Students create the patient features
- Instructor scripts/creates the desired patient features.
- Virtual (case studies - computer-presented).

[At this point in this presentation, brief video clips were presented of students simulating patients for various instructional purposes. Brief clips of the following were shown:

- Disorders of Voice (alaryngeal speech and vocal abuse patients)
- Disorders of Fluency (2 adult patients)
- Broca's aphasia (3 patients )
- Werniche's aphasia (3 patients)]

Students were provided various degrees of training depending on the purpose of the patient simulation. Frequently they were graded for how well their portrayal represented the intended patient, for their peer's clinical management experience. The following statements describe some of the characteristics of the student preparation process:

- Motivation was facilitated via grading of performance.
- Students were auditioned for voice disorder assignments.
- Sometimes students were reviewed/critiqued by the instructor prior to involvement with the peer clinician.
- Audio and video tapes of representative disorders were made available to the students.
- Group planning sessions were held.

The preceding descriptions of patient simulation uses for instructional purposes represented only a small part of the otherwise traditional instructional approaches used in these graduate classes. The dominant instruction modes remained lecture and demonstration.

I no longer use these instructional modes as I do not teach the courses where these patient simulations were first applied.

I have conducted research on the students' reactions to the preceding uses of patient simulation. The following is just a sample of how students

regarded such experiences. Students rated their personal reactions to the patient simulation experiences on the following parameters for three classes, where 1=weak and 9=excellent. The Mean ratings for the following parameters were:

**Students' Mean Ratings for 3 classes (1=weak; 9=excellent)**

Personal Seriousness	6.98
Degree of Reality	6.44
Patient Insight Devel.	6.86
Relative Ed. Value	7.65

**In-depth Description of Patient Simulation as a Primary Component of Problem-Based Instruction in Dysphagia**

One focus of this presentation is to describe my use of patient simulation in dysphagia classes. Patient simulation and problem-based teaching were combined and became the dominant instructional mode in my dysphagia class in 1994. Although frequently modified since first used, problem-based teaching has continued to be the dominant method used to facilitate learning in the dysphagia class.

The basic format of my problem-based approach in teaching my dysphagia class is the following:

The students are involved in team management of six simulated patients. Five of these patients are adults referred by hospital staff physicians. Each is simulated by a trained peer from each team. Five students are assigned to each team.

I explain to the students that in problem-based learning they are to work in their assigned groups to

1. determine what they already know about the patient problem presented
2. determine what they perceive they need to know in order to manage the first patient
3. determine and understand the skills necessary to interpret the patients' hospital charts and conduct a dysphagia assessment (clinical/bed side and instrumental/MBS sessions)
4. prepare a written dysphagia management report

I place the students in their groups, explain the role of each member, and let them begin their group work the first session. The students are informed that I will offer 10 lectures on selected topic areas that are either very important or areas in which it is difficult to find well-organized or current information. The students are also informed that I am a major resource to be consulted for assistance in locating resources.

### **Dominant Features of My Problem-Based Approach**

- A. Each student has an assigned role that rotates for each of five adult patients. These roles are:
1. Facilitator - is in charge of the group process; keeps the action going
  2. Patient - assumes the patient's role when summoned
  3. Reporter - writes and submits a brief account of each team meeting to instructor
  4. Scribe - the group secretary - maintains records of the information needs and assignments for the group
  5. Report writer - actually types final copy.

- B. Students are assigned to assess and write dysphagia assessment and management recommendation reports for six patients, five adults and one child.
- C. A schedule is created with due dates for each patient's diagnostic report.

Student teams are allotted 3.5 weeks to prepare for, assess and recommend management of the first patient. Each subsequent patient must be managed in progressively shorter time periods.

- D. Ten lectures are presented through out the quarter.

Lecture topics include interpreting modified barium videofluoroscopic; food textures; radiation safety; tracheotomy tubes; non-oral feeding; pediatric dysphagia; fiberoptic endoscopic examination of swallowing; medical communication and so forth.

- E. All student team assessments of simulated patients are conducted during class time.

These class times consist of simulated bedside and videofluoroscopy assessments of one member of the team simulating a patient according to a developed 'script.' A method of illustrating the videofluoroscopic still images at several points in time between oral and esophageal phases of swallowing has been developed over the years. This approach encourages students simulating patients to understand the deviant swallow and the disordered physiology as it changes in response to management strategies. And, more importantly, it give assessing members of the teams experience in making decisions in response to simulated illustrations of MBS results. Student teams are expected to meet together outside of class in preparation as needed.

- F. Five of the referred patients are adults and are simulated by a member of each team

A single plan or 'script' is developed by all the patients from each team working together and apart from their peer teams. The development of the plan is guided and approved by the instructor. Plans/scripts are finalized over 1-2 classes.

The plan [Patient Script] includes

- what to anticipate from the peer team
  - important behaviors and personal traits that they will need to simulate/portray
  - methods to portray the swallowing problems and other appropriate behaviors (depression, confusion, impatience, etc.)
  - how to use special illustration techniques to communicate MBS results
  - the dysphagia management outcomes that they will attempt to influence their team to choose
- G. The sixth patient is a pediatric patient and team management is entirely via written description.
- H. Simulated hospital charts have been authored and made available as a website for each patient.

Teams are referred to these charts for medical information on their current hospital stay. A sample can be viewed at <http://oak.cats.ohiou.edu/~deanr/stroke.htm>

- I. The goals of problem-based learning in the course are:
- develop knowledge about dysphagia and its management

- develop skills in assessing and managing dysphagia
- develop ability to guide self-learning.

J. Grades for the course are based on:

- patients management by team-- 30%
- Instructors subjective evaluation of how the three goals have been accomplished-- 20%
- patient simulation by individual-- 15%
- take-home exam-- 10%
- peer evaluation by team members-- 10%
- individual oral or written report(s)-- 10%.
- weekly quiz average-- 5%

K. Each patient management problem is critiqued (in two ways).

First, each student submits a list of 10 prominent topics or skills they have learned in the period of study devoted to the patient under review. The instructor then summarizes these topics and skills for frequency of mention.

Second, the instructor points out the strengths and weaknesses observed during the patient assessment and counseling sessions and those noted in the various written reports.

L. Students are provided feedback on their class performance and standing midway through the course.

Tentative grades are presented. Advice is offered for ways to increase performance and learning. Suggestions from the students are requested/invited and sharing of personal impressions of the problem-based curriculum encouraged.

### **Additional Uses of Patient Simulation**

Problem-based assignments have also been used in otherwise traditional didactic instruction in graduate classes in Augmentative Communication, Orofacial Disorders, and web-based courses on Dysphagia.

In this module students in training chose a patient referred by a physician for assessment. The students then goes through the following sequence of experiences:

- They consult anyone of eight sections of the patients medical charts.
- They visit the patient in the patient's room to make appropriate observations and conduct a bedside evaluation.
- Written descriptions of patient's responses to requested observation or menu-suggested informal tests are provided.
- The students then join the selected patient in a simulated radiological suite where students have the options of providing the patient with any of 5 consistencies of food.
- Students can observe the patient's swallowing of the administered foods via videofluoroscopy using any of 5 head or body positions or using any of 6 modifications to swallowing via patient instruction. For each of the various swallowing options that the students may choose for the patient, they will observe the swallow physiology via videofluoroscopy. This feedback is provided from digitized video clips of single swallows selected in response to swallow requested. Each select clip is chosen to provide representative results for the five patient types in the module.

### **Representative Student Responses to the Problem-based Approach to Dysphagia Classes (not to the Virtual Patient just described)**

#### **Students Like:**

- Practical

- Hands-on Learning
- Develop insight into patients emotional traits
- Develop insight into swallow physiology (Re: dysphagia)
- More comfortable with real patients of the same type at a later date

### **Students' Dislike: (directed more to PBL than PS)**

- Not enough structure, guidance from instructor
- Do not cover as much information
- Do not like to do peer evaluations
- Some prefer more objective assessment to determine grades
- Some prefer more grading weight be on individual than group effort

### **Advantages of Patient Simulation**

- Provides access to broader variety of patient types
- Develops insight into patient condition and behaviors
- Provides practice in skill development at no risk to real patients
- Allows access to patients at convenient times (e.g. during class times)

### **A Training Tool to Facilitate Implementation of ASHA's New Standards**

After hearing the presentations on Issue III: Strategies for Implementing the New Standards in Audiology and Speech-Language at the CAPCSD morning session preceding the afternoon of this presentation, this presenter saw a great value to, and role for, patient simulation in meeting the increased demand for skill development in the classroom. Some advantages for the approach are listed below. The names in parentheses were presenters on Issue III.

- Facilitates development of competencies via class assignments.
- Confrontation with simulated patients in designed experiences can

nurture critical thinking, problem solving, & decision making. (Re: Lubinsky)

- Helps students and instructors "walk-the-walk" (Re: Quesal).
- Puts "life" into case study-based learning (Re: Pickering)

### **Disadvantages of Patient Simulation**

- Patients takes time away from other class study.
- Realism is only approximated.
- Requires that the instructor have increased awareness of patient characteristics.
- Can take significant time - particularly initially.
- Difficult to assess performances objectively.

### **Issues in Using Patient Simulation:**

- Patient source(s)
- Instructional goals to be facilitated via the simulated patient
- Instructional Role (primary/supplemental)
- How to train the patient(s)
- How to validate the patient(s) [if necessary]
- Shared by all or members of subsets
- Special facilities for recording, to add realism, etc.
- Determining patient features to 'preserve' or feature

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