

# Coverage<sup>©</sup>: A Simulation Game to Teach Health Care Financing

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Faced with poor student performance on the health care financing questions of a final examination in a community health clerkship, the faculty designed and utilized an innovative simulation game, Coverage<sup>©</sup>, to assist students in learning the complexities of various health insurance plans. This article describes the development, design, and use of this game. Medical students have enjoyed playing the game and have improved their performance in the final examination.

Educational games are used in a wide range of fields. Published reports describe exercises for teaching politics, economics, environmental issues, international relations, law, architecture, marketing, military strategy, religion, and urban studies.<sup>1</sup>

Instructional games are defined by Belch<sup>2</sup> as those educational devices that generally, though by no means always, combine gaming, simulations, and role playing. The following definitions may be helpful. *Games* are contests having competing players, rules, and rewards assigned to the goal outcomes. *Simulations* are models of social, mathematical, or physical situations that abstract reality for simplification of problem solving. Games and simulations are frequently combined to form a simulation game. *Role playing* contains many of the elements of simulation but is usually more structured, involving the player in the problem as an individual rather than solely as a competing participant in the decision-making process.

In the field of health care education, Zelmer and

Zelmer<sup>3</sup> state that when there is a conflict between students' need for practice and the rights and safety of a patient, or where students must learn how to deal with unusual situations, simulations in the form of instructional games may be helpful. Such simulation games also create good opportunities for memory recall and for practice in problem solving.

Educational researchers are currently examining the impact and effectiveness of gaming as a teaching technique. Belch<sup>2</sup> states that while games appear to be no more effective than conventional modes of teaching for imparting knowledge, they do encourage player involvement. According to Horn and Cleaves,<sup>1</sup> games appear to develop ability in reasoning and drawing inferences as well as promoting the understanding of concepts, processes, and restraints.

Belch notes that the number of educational games and simulations used explicitly as teaching tools has increased geometrically since 1960. Even so, there are as yet few commercially available simulations in the health care field.<sup>3</sup>

Examples of simulation games used in medical education include a card game used to teach cardiovascular physiology to first-year medical students<sup>4</sup> and a simulation game to teach protocol design for clinical trials of a new drug.<sup>5</sup> Computerized patient simulations and role-playing exercises

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are used in the Brown University Program in Medicine community health clerkship and have been previously described.<sup>6</sup>

This article describes the development and use of a simulation game designed to assist medical students in learning the details of health insurance coverage.

### Genesis of the Game

A six-week clerkship in community health is required for all Brown University medical students. Health care financing constitutes part of the core curriculum. In 1979 this curriculum area was addressed by means of a written syllabus and a seminar. The syllabus contained a glossary of terms and selected reprints and statistical tables on health care costs. The seminar was conducted by the executive director of a local health maintenance organization (HMO) who also had previous work experience with a large private health insurance firm and with the Health Care Financing Administration. His two-hour presentation was highly rated by both students and faculty observers as well organized, enthusiastically delivered, well paced, and appropriately geared for the level of the students.

Despite what appeared to be a good seminar and syllabus, the students scored poorly on those aspects of the final oral examination that dealt with health care financing. With the assistance of an education specialist (NMM), the curriculum was examined to determine how student learning could be enhanced.

A consensus emerged that if students were more actively involved, they would learn more. The faculty hypothesized that factual retention of information was low because students had had no significant exposure to the material prior to the clerkship and reinforcement through application of knowledge was minimal after the seminar.

The situation appeared to call for the following advantages offered by simulation games when used as an educational tool: (1) heightened personal involvement, (2) opportunities for problem solving, (3) demands for memory recall, (4) illustration of processes, and (5) recognition of restraints. Considering these factors, the faculty decided to create a board game for the purpose of teaching the strengths and weaknesses of different types of insurance coverage.

### The Game

A seldom-used game was uncovered in the closet of one of the authors (SRS). With little adaptation, its layout was suitable for the proposed new use. Since then, the game has been professionally designed and produced. Players roll dice and move their pieces around the periphery of the board, landing on spaces that may be purchased or on spaces that require the player to draw a card from a pile in the center of the board. If another player lands on a purchased space, a fee of 20 percent of the purchase price must be paid to the owner. This simulates the real-life experience of people having to pay health-related bills in the context of many other financial considerations.

Each player is assigned a health insurance policy, either Blue Cross/Blue Shield with major medical coverage, or enrollment in an HMO or Medicare, including Parts A and B. Each revolution around the board earns the player either a paycheck or a social security check minus the usual taxes and health insurance premium. The premiums are based upon actual rates in the Providence, Rhode Island, area.

When a player lands on a space requiring him or her to draw a card, the player reads the information, a health care event and the costs associated with it, to the other players. Events include health maintenance visits, dental care, acute minor illnesses, prescriptions, mental health services, short-term hospitalizations, emergencies, and catastrophic illnesses requiring long-term care. The cards are in two piles, one for the HMO and Blue Cross/Blue Shield players, and one for the Medicare players. The Medicare cards deal with problems more prevalent in an elderly population.

In a hypothetical game, for example, player A has Blue Cross/Blue Shield coverage including major medical. He draws the card describing a leg fracture. The following expenses are listed: ambulance \$100, emergency room \$300, hospitalization (two days) \$400, follow-up visits \$200, and crutches \$15, for a total of \$1,015. By referring to a table, player A sees that the emergency room visit and hospitalization are fully covered. If he has already met his \$100 major medical deductible, he then must pay 20 percent of the bill for the ambulance, crutches, and follow-up visits. The cost is \$65. In the same situation, player B, with HMO coverage, would have paid only the \$15 for crutches.

If the player had not kept track of earlier expenses that met his \$100 deductible, a common situation in everyday practice, he would have had to pay even more. This type of situation occurs repeatedly during the course of the game, reinforcing the importance of meeting deductibles and underlining the contrast between various forms of health insurance coverage.

Each time a player picks up a card, he is faced with the problem of figuring out whether the health expenses incurred are covered. In some situations coverage is easy to determine, in others it is highly complex. "Elderly" players on Medicare face the catastrophic financial consequences of fractured hips or cardiovascular aneurysm as well as those of minor aches and pains. Financial restraints become vividly clear.

The HMO and Blue Cross/Blue Shield players start out with a net worth of \$10,000. One Medicare patient has a net worth of \$75,000 and the other of \$6,000. The discrepancy here emphasizes the particular vulnerability of the elderly poor. Any player who goes bankrupt is entitled to Medicaid for the rest of the game. At the end of one hour's play, the player with the largest proportional increase in net worth is the winner.

As an incentive, the winner is awarded a bottle of French wine.

## Results

Student reaction has been highly enthusiastic. During play the goal of active participation appears to have been achieved as evidenced by animation, laughter, excitement, and occasional outbursts of profanity or exaltation.

Students accurately interpret the provisions of their respective health policies. Faculty members serve as the "fiscal intermediaries" and bankers to ensure compliance and prevent fraudulent claims.

Winning appears to be related more to good fortune than to any particular health insurance policy, since every category of player has won the game at least once, even the poor Medicare player. Faculty supervisors interrupt the game periodically to point out and emphasize important aspects of health care financing. For example, a player who forgets to log an out-of-pocket expense is compared with a worker who forgets to save a receipt, thus delaying the point when major medi-

cal insurance would become operative.

Students appear to gain a greater sensitivity about the general lack of coverage for preventive and ambulatory services and the financial burden on the elderly for health care. Students often exhibit dismay at the "bills" they receive for health services. Some students have exhibited depressive signs such as sullen mood, apathy, and withdrawal when they become destitute and are placed on Medicaid. This behavior is restricted to the Medicare players who are unfortunate enough to have suffered the consequences of drawing the "stroke" card and incur the subsequent need for long-term care in a nursing home.

Performance on the health care financing section of the final oral examination has improved dramatically, with over 80 percent of the students now fully meeting the criteria for correct answers whereas less than 50 percent had previously done so.

## Conclusions

The use of a simulation game, Coverage®, has proven to be an effective and enjoyable means to assist students in learning the intricacies of health insurance. It also appears to have increased the consciousness and sensitivity of the students to health care costs. The game may also have value for groups other than medical students, such as unions, health care administrators, medical office personnel, and consumers, to name only a few.

Medical educators might wish to consider the use of simulation games for other applicable curriculum areas.

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