

## **Painful conversations: how to learn to say what no one wants to hear**

### **Abstract**

Over that past 6 months we have outlined a computer simulation game that allows students to discover how difficult it is for doctors to say the right things to patients near the end of life. Our project will develop a working prototype of this game, featuring a complicated patient with incurable breast cancer, and then measure the game's educational utility using both observational and experimental methods. With the completion of this developmental phase, we plan to compete for external funding in order to create a more versatile game with multiple bad news scenarios and the potential for widespread educational and commercial use.

### **Background**

Communication between physicians and patients is a fundamental aspect of patient care, but when it comes to delivering bad news, or soliciting advance directions, or asking patients and their families to consider hospice, medical students receive little formal teaching. UVA medical students have a few hours in POM1 and AIM, and in addition they may have opportunities to watch what happens when housestaff and attendings approach complex decisions during family meetings. However, clinical situations that require these skills are hit or miss, and chances are that when our students become interns and have to ask the tough questions in difficult circumstances—ERs, ICUs, crowded hospital wards, tightly booked clinics—they will not be prepared (1).

It is one thing to teach students the concrete skills and knowledge they need to recognize and treat common diseases. It is another thing altogether to teach students to manage the unpredictable and emotionally charged discussions that take place when biotechnology has failed and cure is not an option. This aspect of medical education, which addresses psychosocial as well as biological issues in patient care, encompasses the art of medicine and calls on empathy, moral imagination, courage, and reflective practice (2).

Donald Schön, an educational philosopher and theorist, has developed the concept of reflection-in-action, the extension of expertise into unfamiliar domains in order to deal with the unexpected (3). Joseph Henderson, who directs the Interactive Media Laboratory at Dartmouth School of Medicine, integrates Schön's ideas with those of the organizational theorist Max Boisot and uses both the Boisot epistemological space or E-space and the Kolb learning cycle (experimentation-abstraction-observation-experience) to model medical education along two axes of uncoded-coded information and concrete-abstract information (figure 1) (2-5). Technical information is both highly coded and concrete. Scientific knowledge is highly coded and abstract. Intuition is uncoded but concrete. Artistry in medical practice, including professional and personal values, is uncoded and abstract. In the lower uncoded sectors of this model we find the clinician's sense of the patient's understanding (more concrete) and the clinician's skill in developing a therapeutic relationship (more abstract). In the highly coded upper sectors we can locate more conventional aspects of patient care, for example highly coded and concrete pharmacologic options or highly coded but abstract concepts of molecular pathophysiology. The Kolb cycle is dynamic. Physicians move around in this space, and

in the integrated model proposed by Henderson, students could move around in a simulated space that allows risk taking and promotes affective learning.

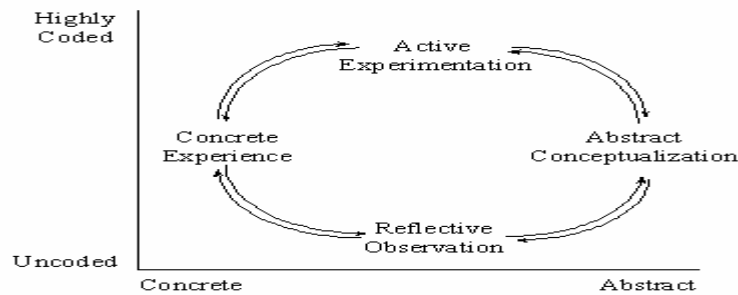


Figure 1- from reference 2

Henderson produces Virtual Practicums that immerse learners in computer generated scenarios that also provide expert guides. Because students are led through the exercise, these Practicums are different from computer games.

Since July 2005 I have been co-teaching a monthly “bad news” seminar for AIM students. We use a standardized patient who pretends to have advanced breast cancer and ask the students, in turn, to explain to the patient that there are no longer any chemotherapeutic options and to then help the patient understand the need for a palliative approach. The “bad news” conversation ends with a discussion of advance directives. After working our way around the room, giving each student an opportunity to move the discussion along, we review the scenario and provide an outline that shows students how to frame the conversation. We use the SPIKES protocol (setting, perception, information, knowledge, empathy, summary) for teaching “bad news” conversations because it is easy to use and usually makes immediate sense to the students (6).

As useful to the students as this seminar is, it is not enough. They need to practice this conversation. They need to enter Boisot’s E-space and wander around. Once there they can learn what it might be like to say the wrong thing and if so, to then back up and try another approach.

Since September I have been working with a PhD candidate in the UVA Curry School of Education, Elizabeth Fanning, to translate the standardized patient role play developed for the AIM seminar into a computer game, *Painful Conversations*. Her extensive experience and accomplishments in instructional technology are outlined in her biosketch below. In February 2006 we presented a mock-up of this game to a group of 16 3<sup>rd</sup> year medical students during the AIM rotation. 10/16 of the students would describe this kind of learning as “engaging” or “meaningful.” Two students were confused by this approach. One student thought that learning in this manner would be an inadequate drill. Opinion was divided on whether to use the game individually or in a small group with a faculty leader. 11/16 felt strongly that the game would improve patient communication. 13/16 felt it would be a useful way to synthesize clinical and communication skills. All of the students felt that if this game were developed and available they would use it more than once.

This project reflects my interest and experience in palliative care, medical education, narrative medicine (illness as story), and creative writing.

## References

1. Back AL, Arnold RM, Baile WF, Tulsy JA, Fryer-Edwards K. Approaching difficult communication tasks in oncology. *CA A Cancer Journal for Physicians* 2005;55:164-177.
2. Henderson JV. Comprehensive, technology-based clinical education: the “virtual practicum
3. Schön D. Educating the reflective practitioner: toward a new design for teaching and learning in the professions. Jossey-Bass: San Francisco, 1987.
4. Boisot MH. Information space: a framework for learning in organizations, institutions, and culture. Rutledge: London, 1995.
5. Kolb D. The learning style inventory: technical manual. McBer: Boston, 1976.
6. Baile WF, Buckman R, Lenzi R et al. SPIKES- a 6 step protocol for delivering bad news: application to the patient with cancer. *Oncologist* 2000;5:302-311.

## **Goals**

We hypothesize that a computer game simulation will improve the process and outcome of medical student-patient communications. This project has three goals: 1) develop a playable “bad news” game prototype that records players’ experiences inside the game; 2) pilot the game with a large sample of faculty and students in order to chart choices, discover problems, and refine the simulation; and 3) test the education utility of the game in a randomized experiment using a standardized patient and a valid and reliable scoring protocol.

## **Research plan**

Goal 1- develop a computer game simulation prototype  
 From July-September 2006 we will use Macromedia Flash to build a *Painful Conversations* prototype that models the bad news cancer scenario used in the AIM workshop. We have already drafted a script with branch points based on a set of established user choices. The script incorporates game-play elements (i.e., scoring, conflict, user-driven decision making, exploration), creates opportunities for incidental learning, offers demographic and cultural diversity, and establishes a sense of flow that challenges users to explore and test different decisions. Once refined the script will be repurposed into storyboards, and at that point programmers, computer artists, and audio-video specialists (Moberg Multimedia Research) will assemble the conversation along instructional pathways. As prototype development proceeds iterative reviews will assess “look and feel,” check for accuracy and conveyance of content, and debug the technical elements. This prototype will serve as the visual and technical framework for additional scenarios that explore other difficult subjects (e.g., sexual abuse, substance abuse, HIV status). The bad news simulation game will require 20-30 screens, interactive video and audio segments depicting patient contacts, and links to the internet that provide basic science, clinical, public health, and narrative context. In order to track the learning process the programming will include recordkeeping routines that start with login and follow the user past each decision node. The user’s decisions will be mapped to specific learning points—cognitive, affective, performance based—that correspond to the SPIKES protocol and other conventions that guide doctor-patient interviews (see discussion below re: the “bad news” OSCE—objective, standardized, clinical encounter.

At the end of a session with the simulation, the user will receive a summary of his or her performance.

Goal 2 - pilot the game

From September 2006- March 2007 we will invite faculty, students, game experts, and other potential collaborators to play the game. During this period seven cohorts of AIM students will have a chance to play the game before their “delivering bad news” seminar. On a parallel track, other educators and palliative care experts at the SOM are developing, scoring, and testing a “bad news” OSCE that not only uses a similar scenario but also uses the same standardized patient trained during our AIM workshop. I will work with the “patient” and the other faculty to develop and validate the OSCE scoring process. This OSCE will later be used to test the educational utility of *Painful Conversations* (see below). The reliability and validity of OSCE testing is based on comparing scores among observers with different points of view (the student, the “patient,” several faculty observers) and use of a score card that captures the essential elements of the interaction. During development of the OSCE, inter-rater reliability will be followed and scoring adjusted to achieve a correlation of at least 0.7.

Feedback from the various types of users, in addition to the UVA medical student OSCE results, will be used to refine the game and insure that its learning objectives correspond to the literature, OSCE expectations, and personal experience with bad news and illness.

The testing phase of game development (see below) will follow UVA SOM human investigation committee guidelines for educational studies.

Goal 3- evaluate the educational utility of the computer simulation.

By April 2007 we will have a playable and testable game. We will also have a reliable and valid OSCE, scored on an interval scale, which correctly identifies students with adequate or less than adequate interviewing skills in this setting.

In the 2007-08 SOM academic we plan to recruit 30-40 3<sup>rd</sup> year students at the end of their AIM rotation. By then they will have had some clinical experience and more recently the “bad news” AIM seminar (always scheduled during the last weeks of the rotation). Student “subjects” will complete a pre-study questionnaire that assesses their clinical experience with bad news discussions as well as their familiarity with protocols for presenting emotionally difficult material to patients. Assuming a type 1 error of 5 %, a one tailed test of significance (our game will not de-educate the students), a type 2 error of 10%, a “treatment” (educational utility) benefit of 25 % of the mean raw score, and a normal distribution of control scores with a standard deviation approximately equal to the “treatment” effect, this sample size stays within budget and statistical constraints (7). However, if during OSCE development it appears that scores are not normally distributed, we would then perform a log transformation of results in an attempt to achieve normality. If the log transformation did not work, we would use a Wilcoxon Rank Order Test. Neither of these analyses would jeopardize our power estimates.

Students will be randomized in block groups of 6 to insure equal numbers as the study progresses. \$15.00 gift certificates (another funding source) to the medical book store will encourage participation. The standardized patient, who happens to be a

palliative care nurse, will receive \$500.00 in discretionary funds for work related travel or education (another funding source).

Experimental students will have the opportunity to “play” *Painful Conversations* for at least 30 minutes. They will not be allowed to complete the OSCE until they are familiar with the game. The game DVD they use will record their experience.

Control students will undertake the OSCE without any extra preparation.

All student subjects will interview the standardized patient, posing as a patient with advanced breast cancer. The “patient” and I will score each interview independently. We will also be blinded to the experimental or control status of the student. The primary outcome measure of the study is the average of the two OSCE scores. Differences between experimental and control groups mean scores will be tested for statistical significance using a students t-test. The effect of confounding variables, including demographic differences or clinical experience, will be assessed using logistic regression. Finally, all students will complete a post-interview questionnaire that asks them how well prepared they thought they were for the OSCE.

#### Reference

7. Julious SA. Tutorial in biostatistics: sample sizes for clinical trials with normal data. *Statist. Med* 2004;23:1921-1986.

#### **Plans for publication and dissemination of results**

In October 2006 we will present an abstract of this work at the Games for Health national meeting in Baltimore. Another abstract, including a description of the game and pilot data, will be submitted to the AAMC 2007 national meeting in Seattle. By next spring our first manuscript will be ready for submission to *Academic Medicine*.

We plan to apply for additional funding to the Gold Foundation for Humanism in Medicine and the Arthur Vining Davis Foundation. The latter expects grantees to have matching institutional funds, and ADE funding would provide the required demonstration of institutional support.

The project outlined in this proposal is the beginning of a longer and more ambitious project to develop, test, and market a computer game simulation that offers a menu of difficult conversations and allows both students and residents to practice high risk discussions with patients and their families.

Principal Investigator/Program Director (Last, First, Middle):

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Becker, Daniel M.		POSITION TITLE Professor of Medicine & Health Evaluation Sciences Chair, Center for Humanism in Medicine	
eRA COMMONS USER NAME			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Pennsylvania	B.A.	1971	
Washington University School of Medicine	M.D.	1975	Medicine
Harvard School of Public Health	M.P.H.	1978	Public Health
Warren Wilson College	M.F.A.	2003	Writing

**NOTE: The Biographical Sketch may not exceed four pages. Follow the formats and instructions on the attached sample.**

**A. Positions and Honors.** List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

1979-1985 Assistant Professor, Department of Medicine, University of Miami  
 1984 Associate Professor, Department of Medicine, University of Miami  
 1985-1990 Associate Professor, Department of Medicine, University of Virginia  
 1990-1996 Associate Professor without Term, University of Virginia  
 1990-1997 Secondary appointment, Department of Public Health Sciences,  
 1990 Interim Vice-Chair, Department of Medicine  
 1990-1992 Chair, Ambulatory Care Education curriculum task force  
 1992 Acting Division Chief, General Medicine  
 1993-1997 Chief, Division of General Medicine  
 1996- Professor; Department of Medicine, University of Virginia  
 2005- Director, Center for Humanism in Medicine, University of Virginia  
 2005- member curriculum committee, UVA SOM

Honors

1985 Fellow, American College of Physicians  
 1992 Dean's Teaching Award, University of Virginia School of Medicine  
 1996 AOA, University of Virginia  
 2003 Academy of Distinguished Educators, entering class  
 2005 Annual creative writing prize, Journal of General Internal Medicine

**B. Selected peer-reviewed publications (in chronological order).** Do not include publications submitted or in preparation.

1. Becker DM, Humphries JE, Walker FB, Sepnar J, DeMong LK, Acker MN. Calibrating the prothrombin times - the machine as well as the thromboplastin. Arch Path Labs Med 1993;117:602-605.

2. Becker DM, DeMong LK, Kaplan P, Hutchinson R, Callahan CM, Fihn SD, White RM. Anticoagulation therapy and primary care internal medicine: a nurse practitioner model for combined clinical service. *J Gen Intern Med* 1994;9:525-527.
3. Kaatz SS, Hill J, Mascha E, White R, Becker DM. Accuracy and agreement of the international normalized ratio between laboratories and coagulation meters. *Arch Intern Med* 1995;155:1861-1867.
4. Ballew KA, Philbrick JT, Becker DM. Vena caval filter devices. *Clinics in Chest Med* 1995;16:295-305.
5. Becker DM, Philbrick JT, Bachhuber T, Humphries J. D-Dimer testing and acute venous thromboembolism: a short cut to accurate diagnosis? *Arch Intern Med* 1996;156:939-946.
6. Wolf AMD, Becker DM. Cancer screening and informed patient discussions: truth and consequences. *Arch Intern Med* 1996;156:1069-1072.
7. Rogers KC, Johnson GL, White DM, Becker DM. Outcomes of clinical pharmacists' recommendation on prescribing of oral H2 antagonists. *Hospital Pharm* 1998;33:1102-1104
8. Mullins MD, Becker DM, Hagspiel KD, Philbrick JT. The role of spiral CT in the diagnosis of pulmonary embolism. *Arch Intern Med* 2000;160:293-298.
9. Girard TD, Philbrick JT, Fritz AJ, Becker DM. Prophylactic vena cava filters for trauma patients: a systematic review of the literature. *Thrombosis Research* 2003;112:261-7.

Book Chapters (selected)

1. Becker DM and Goodman MJ. Professionalism, humanism, and mindfulness in the melee of health care. In: Mills A, Chen DT, Werhane PH, Wynia MK (eds). *Educating for professionalism in tomorrow's health care system: towards fulfilling the ACGME competencies in professionalism and system-based practice*. Hagerstown: University Publishing Group. 2005.
2. Becker DM. Through the looking glass- the patient's point of view. In: Mills A, Chen DT, Werhane PH, Wynia MK (eds). *Educating for professionalism in tomorrow's health care system: towards fulfilling the ACGME competencies in professionalism and system-based practice*. Hagerstown: University Publishing Group. 2005.

Poetry in *JAMA*, *Pharos*, *JGIM*, various literary magazines; chapbook of poems-*Chance*-appearing spring 2006

Principal Investigator/Program Director (Last, First, Middle):

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Fanning, Elizabeth		POSITION TITLE Education Technology Specialist	
eRA COMMONS USER NAME			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Michigan, Ann Arbor	B.A.	1983	English/Film-Video Studies
San Francisco State University	M.A.	1992	Instructional Technologies
University of Virginia	PhD	2005	Instructional Technologies

**C. Positions and Honors.** List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

1988-1990 Contributing writer and illustrator; VIZ FX, San Francisco, CA  
 1990-1992 Special Projects Coordinator, Department of Public Education, The Fine Arts Museums of San Francisco, San Francisco, CA  
 1992 Instructional Designer, ASA, McLean, VA  
 1992 Multimedia Producer, The Training Corporation, Occoquan, VA  
 1994 Interface Consultant and Writer, Avalon Integrated Systems, Reston, VA  
 1995 Content Developer and Writer, Genuine Entertainment, Jacksonville, FL  
 1995 Instructional Designer, UP, Inc., Herndon, VA  
 1996-1997 Instructional Designer, Carney Interactive, Alexandria, VA  
 1997 Instructional Designer, Lucent Technologies, New Jersey  
 1996-1997 Instructional Designer, Perform Tech, Silver Spring, MD  
 1998-1999 Distance Learning Specialist, N. Va. Community College, Alexandria, VA  
 2000 Technical Writer, Pack-Online, Herndon, VA  
 1996-2000 Instructional Designer, ELF, Inc., Bethesda, MD  
 1999-2000 Instructional Designer, ESI, Inc., Fairfax, VA  
 2001-2003 Instructional Designer, Re-Learning/ORS Interactive, Leesburg, VA  
 1997-present Curriculum Writer, Clark Construction, Bethesda, MD  
 2002-2003 Instructional Designer, Re: Discovery Software, Charlottesville, VA  
 1996-2005 Instructional Designer/Content Writer, Windwalker Corp., McLean, VA  
 2003-2005 Teaching Assistant, The University of Virginia, Charlottesville, VA  
 2004 Instructional Designer, Genworth, Richmond, VA  
 2004 Instructional Design, Capital One, Richmond, VA  
 2004-2005 Coordinator and Co-Trainer – Children of War, Center for Multicultural Human Services, Falls Church, VA  
 2004 Instructional Designer, Kaufman and Associates, Spokane, WA  
 2005-present Educational Technology Specialist, The University of Virginia School of Continuing Professional Studies, Charlottesville, VA

April 14, 2006

To Whom It May Concern:

As Section Chief of General Medicine in Division of General Medicine, Geriatrics, and Palliative Care, I am writing in strong support of Daniel Becker's proposal to develop a computer game that simulates difficult patient conversations. I agree with him that this aspect of medical education is both important and under taught. His proposal is not only innovative, but it also leads to a straight forward experiment that tests its educational utility. With development and testing of the initial bad news scenario, I anticipate lots of opportunities to improve the game, extend its reach, publish the results of its educational impact, and eventually market the product.

Sincerely,

John B. Schorling, M.D., M.P.H.  
Harry T. Peters, Sr., Professor of Internal Medicine and  
Public Health Sciences  
Head, Section of General Internal Medicine

(Note- the signed version of this letter, on division letter head, was sent by messenger mail

**Budget**

Year 1: Moberg Multimedia Research, Philadelphia, Pa., \$15,000 for computer game design and production

Year 2: Moberg Multimedia Research, Philadelphia, Pa., \$12,500 for computer game design and production

Randomized trial of the game's educational utility: \$2,500 for recruiting student subjects, organizing OSCE evaluations