Increasing Medical Students' Confidence in Delivering Bad News Using Different Teaching Modalities

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Abstract

Opportunities to learn how to deliver bad news and practice this important skill are limited in most medical school programs. To address this gap, an integrated curriculum was created for first-year medical students at the University of Hawai'i John A. Burns School of Medicine that used a problem-based learning case, a didactic session, and a simulated patient experience to teach students how to deliver bad news using the 6-step SPIKES protocol. Students' competency was evaluated using a video-recorded simulated patient encounter. Students also completed a post-experience questionnaire to assess their confidence in delivering bad news before and after the simulation as well as the perceived benefit of different teaching modalities. A sample of 60 students completed an average of 16/17 (94%) tasks on the 17-item SPIKES checklist. Students' confidence in delivering bad news improved from 32% to 91%, before and after the educational experience. The majority of students agreed or strongly agreed that the simulated patient encounter helped them learn how to deliver bad news (96%), felt that the presentation prepared them to deliver bad news (87%), and expressed desire to have more simulated patient experiences in the future (87%). Overall, this curricular improvement project showed that students had a positive perception of the different teaching modalities, increased confidence at delivering bad news following the simulated patient encounter, and a preference for more simulated patient encounters linked to problem-based learning cases in the future.

Keywords

Delivering Bad News, SPIKES Protocol, Communication Skills, Medical Education

Abbreviations and Acronyms

JABSOM = John A. Burns School of Medicine
PBL = Problem-Based Learning
SPIKES = acronym for a protocol for delivering bad news that includes Setting, Perception, Invitation, Knowledge, Empathy, Strategy/Summary

Introduction

Delivering bad news is an important skill that physicians must possess to effectively communicate with their patients. Bad news has been defined by Buckman et al as "any news which adversely and seriously affects an individual's view of his or her future."[1] The process of breaking bad news reflects a critical moment that can strengthen or weaken the relationship between a physician and a patient.[2,3] If bad news is delivered poorly, it can adversely affect the patient and lead to more stress, misunderstanding, and poor health outcomes.[3-6] For physicians, stress related to delivering bad news can contribute to anxiety and burnout.[6]

Although physicians deliver bad news to patients on a regular basis, many feel uncomfortable and unprepared for this type of encounter.[7-9] Early training in this area during medical school may help to adequately prepare future physicians for these patient interactions. Several studies have analyzed the utility of various formal training modalities (lectures, small group discussions, role-play, and simulated patient experiences) on enhancing bad news delivery skills of medical students and residents.[2,4,9-11] These studies used the 6-step SPIKES protocol, which offers an approach to delivering bad news. The name "SPIKES" describes the consecutive steps that one can follow to deliver bad news. The letter S represents "setting," which is the preparation for the discussion. The next 2 letters, P for "perception" and I for "invitation," determine how much the patient knows and to gauge their readiness to receive the news. K for "knowledge" represents the information shared with the patient regarding their situation. E for "empathy" describes the individual's ability to connect and respond to the patient's emotions. Lastly, S for "strategy/summary" determines if the patient understands their medical situation and the next steps moving forward.[2,6,12]

Prior to this project, medical students at the University of Hawai'i John A. Burns School of Medicine (JABSOM) learned how to deliver bad news during their preclinical years through a recommended learning topic which students researched and briefly discussed with their problem-based learning (PBL) groups. In this curriculum, the authors used different modalities to provide hands-on experience using a problem-based learning case, a didactic session, and a simulated patient experience to teach medical students how to deliver bad news. The aims of this project were to assess students' perception of different modalities in teaching this communication skill using the SPIKES protocol and to evaluate the effect of a simulated patient experience on students' confidence in delivering bad news.

Methods

First-year medical students (N=78) at JABSOM participated in an integrated learning experience on delivering bad news to patients, which was incorporated into their pre-clerkship curriculum during the 2019-2020 academic year. All 78 first-year medical students completed a 3-hour PBL case with faculty tutors, which involved informing an elderly woman of her diagnosis of lung cancer. The entire class then attended a 1-hour didactic session 4 days later led by the authors, which

discussed the different aspects of the SPIKES protocol with integrated role-play.

Out of 78 students, 76 students participated in a 7-minute video-recorded simulated patient experience to practice delivering bad news to a patient using the SPIKES protocol 5 days after the didactic session. Two students were absent on the day of the simulated experience and were not included in data collection. There were 5 simulated patients in total, who were all volunteers from the community and did not receive any monetary compensation. In the week prior to the simulation, the authors met with the volunteer simulated patients for a brief orientation, where they received a handout describing the PBL case with a character description of the simulated patient and observed a modeled example of the patient encounter.

Out of the 76 students, 72 students consented to the video-recorded simulation. Twelve of these students were unable to be evaluated due to technological difficulties. Therefore, 60 students performed the simulated patient encounter, were evaluated using the SPIKES checklist, and completed the post-experience questionnaire. Each student received their scored SPIKES checklist for their encounter in their mailbox at JABSOM after they completed their end of unit exam. The students did not view their recordings.

The video recordings were reviewed by 5 second-year medical students, which included the first 3 authors. The authors taught the other second-year medical students to evaluate the participants using a 17-item checklist (**Figure 1**). This checklist was adopted from a previous study and modified based on the steps of the SPIKES protocol but has not been formally validated.[4] Each participant's recording was observed by 1 second-year medical student evaluator. For each of the 17 tasks on the SPIKES checklist, the evaluators marked "Yes" if the task was observed during the encounter. If the task was not observed during the encounter, the evaluators marked "No."

For each checklist item (eg, "sits down during the interview," demonstrated as numbers 1-17 on **Table 1**), the percentage was calculated using the number of students who completed the task divided by the student cohort ($N = 60$). These percentages were then averaged among each step of the checklist (eg, "setting," demonstrated as letters A-F on **Table 1**). The average total number of tasks completed was calculated using the cohort's overall number of tasks completed divided by the number of participants in the cohort.

A. Setting	Yes	No
1. Sits down during the interview		
2. Establishes rapport with the patient		
3. Non-verbal signaling connection to patient (eg, eye contact, proximity to the patient, appropriate physical contact)		
4. Limits interruptions		
B. Perception	**Yes**	**No**
5. Checks what the patient has been told/knows about their medical situation so far		
6. Checks and addresses patient's current feelings		
C. Invitation	**Yes**	**No**
7. Checks patient's readiness to receive the results; how much and in what detail the patient prefers		
8. Provides forewarning to news that is about to be delivered		
D. Knowledge	**Yes**	**No**
9. Expresses personal regrets		
10. Uses clear non-medical language		
11. Speaks slowly and occasionally pauses to allow patients to comprehend the information		
E. Empathy	**Yes**	**No**
12. Provides opportunity for patient to express their emotions		
13. Appropriately responds to patient's reactions and feelings		
F. Summary/Strategy	**Yes**	**No**
14. Asks about patient's readiness to proceed with plan		
15. Provides a follow-up plan		
16. Ask patient to briefly summarize their understanding of their medical situation and future direction		
17. Ask patient if they need any clarification on any information that was discussed in this visit		
Figure 1. SPIKES Checklist for Simulated Patient Experience in First-Year Medical Students, JABSOM Class of 2023		

Table 1. SPIKES Checklist Results from the Simulated Patient Experience in Delivering Bad News among First-Year Medical Students (JABSOM Class of 2023)	
SPIKES Checklist	**Average Score % of participants (N = 60)**
A. Setting	**100%**
1. Sits down during the interview	100% (60/60)
2. Establishes rapport with the patient	100% (60/60)
3. Non-verbal signaling connection to patient	100% (60/60)
4. Limits interruptions	100% (60/60)
B. Perception	**97%**
5. Checks what the patient knows about their medical situation so far	98% (59/60)
6. Checks and addresses patient's current feelings	95% (57/60)
C. Invitation	**96%**
7. Checks patient's readiness to receive the results; detail the patient prefers	92% (55/60)
8. Provides forewarning to news that is about to be delivered	100% (60/60)
D. Knowledge	**98%**
9. Expresses personal regrets	100% (60/60)
10. Uses clear non-medical language	95% (57/60)
11. Speaks slowly and pauses to allow patients to comprehend the information	100% (60/60)
E. Empathy	**99%**
12. Provides opportunity for patient to express their emotions	98% (59/60)
13. Appropriately responds to patient's reactions and feelings	100% (60/60)
F. Summary/Strategy	**76%**
14. Asks about patient's readiness to proceed with plan	90% (54/60)
15. Provides a follow-up plan	100% (60/60)
16. Ask patient to briefly summarize their understanding of their medical situation and future direction	15% (9/60)
17. Ask patient if they need any clarification	98% (59/60)
AVERAGE TOTAL TASKS COMPLETED = 16 / 17 (94%)	

Immediately after the simulated patient experience, students completed a 5-item questionnaire (**Figure 2**) to assess their confidence, the perceived benefit of various teaching modalities, and their desire to participate in more simulated patient experiences in the future. Students were instructed to select 1 answer per question. This questionnaire was created by the authors with the intent of collecting students' perception on different teaching modalities and has not been formally validated. A pre-experience questionnaire was not administered.

For each answer choice on the post-experience questionnaire, a numerical value was assigned: strongly disagree=1, disagree=2, neither agree/disagree=3, agree=4, and strongly agree=5. The average score was calculated for each question on the post-experience questionnaire using these numerical values. In addition, the percentages for each answer choice selected was calculated and compared. At the end of the academic unit, 77 out of 78 students answered 2 questions on their end of unit exam to assess their knowledge of delivering bad news to patients. One student did not sit for the end of unit exam. This project was approved by the University of Hawai'i Institutional Review Board (UH IRB #2019-00286).

The results from the SPIKES checklist, post-experience questionnaire, and end of unit exam questions were summarized by descriptive statistics. The change in students' confidence levels before and after the simulated patient experience was analyzed using a generalized McNemar's test. The relationship between the rating of the simulation experience and the rating of the didactic session was assessed by Kendall's τ (tau) coefficient. The data were analyzed using the statistical software R, version 4.1.1 (R Foundation for Statistical Computing, Vienna, Austria).

Figure 2. Post-Experience Questionnaire, among First-Year Medical Students (JABSOM Class of 2023) Using the SPIKES Protocol to Deliver Bad News to Patients

Results

Students completed an average of 16/17 (94%) tasks on the SPIKES checklist during the simulated patient experience. The students scored 96% or better on 5 of the 6 steps of the SPIKES checklist which included "setting the scene," "perception," "invitation," "knowledge," and "empathy." For the "summary/strategy" step, students scored an average of 76%.

Of the 76 students who completed the simulated patient experience and post-experience questionnaire, there was an increase in students' confidence after the simulated patient experience. Before the simulated patient experience, 32% of students agreed or strongly agreed about feeling confident in delivering bad news to patients, which improved to 91% after the simulated patient experience (**Table 2**).

Ninety-six percent of students agreed (39%) or strongly agreed (57%) that the simulated patient experience was beneficial in teaching them how to deliver bad news. When asked about the presentation, 87% of students agreed (55%) or strongly agreed (32%) that it helped prepare them to deliver bad news.

Eighty-seven percent of students either agreed (42%) or strongly agreed (45%) that they would like to see more simulated patient experiences linked to JABSOM's PBL cases in the future. Of the 77 students who took the end of the unit exam, 94% correctly answered each of the 2 multiple-choice questions related to delivering bad news (**Table 3**).

A correlation analysis was performed on the different teaching modalities using questionnaire results. There was a strong and significantly positive correlation in students' responses; having a positive experience from the simulation correlated with wanting to see more simulated experiences (Kendall's τ coefficient = .50; $P < .001$). A moderate and significantly positive correlation was observed in students' responses which showed that having a positive learning experience from the didactic session correlated with a positive simulation experience (Kendall's τ coefficient = .33; $P = .002$). Additionally, a moderate and significant positive correlation was observed in students who had a positive experience from the didactic session and students who desired more simulated experiences in the future (Kendall's τ coefficient = .32; $P = .002$).

Table 2. Post-Experience Questionnaire Results among First-Year Medical Students (JABSOM Class of 2023) Using the SPIKES Protocol to Deliver Bad News to Patients					
	% of participants (N = 76)				
Questionnaire	1 Strongly Disagree	2 Disagree	3 Neither Agree/Disagree	4 Agree	5 Strongly Agree
Prior to this simulated patient experience, I felt confident in delivering bad news to patients	6% (5/76)	29% (22/76)	33% (25/76)	28% (21/76)	4% (3/76)
After this simulated patient experience, I feel more confident delivering bad news to patients	0% (0/76)	1% (1/76)	8% (6/76)	62% (47/76)	29% (22/76)
Having a simulated patient experience to learn how to deliver bad news was beneficial	0% (0/76)	1% (1/76)	3% (2/76)	39% (30/76)	57% (43/76)
The presentation on delivering bad news prepared me for this experience	0% (0/76)	3% (2/76)	10% (8/76)	55% (42/76)	32% (24/76)
I would like to see more simulated patient experiences linked to PBL cases in the future	0% (0/76)	1% (1/76)	12% (9/76)	42% (32/76)	45% (34/76)

Table 3. Delivering Bad News End of Unit Exam Questions
1. A 40-year old patient presents to your clinic for a follow-up on her biopsy results. As her physician, you prepare to inform her of her diagnosis of small cell carcinoma. After the patient enters the room, you introduce yourself to the patient and discuss how she has been doing since her last visit. You then ask her, "What is your understanding of your medical situation so far?" This is an example of which step of the SPIKES protocol? A: Knowledge B: Summary and Strategy C: Invitation D: Perception* E: Setting up the interview
2. You are a physician caring for a 50-year-old woman who has recently received a lung biopsy. The results of the biopsy confirm a small cell carcinoma. During the visit, you ask open-ended questions to see what she understands about her condition, and she replies that she has just received a biopsy, which will provide more information and may provide a diagnosis. Given what you know about the patient's condition, which of the following is the most appropriate next step in this conversation? A: Ask permission to provide more information* B: Summarize the visit C: Warn the patient with phrases that may suggest bad news is coming D: Reveal the diagnosis in chunks and check for understanding E: Discuss the patient's different options for treatment

*Correct answer

Discussion

Effective communication between a physician and a patient is essential when discussing bad news. Due to the current gap in the medical school curriculum regarding this topic, this project developed a multifaceted learning experience for first-year medical students at JABSOM to develop this skill.

The student cohort correctly performed over 96% of the tasks in 5 of the 6 categories of the 17-item SPIKES checklist: setting up the process, perception, invitation, knowledge, and empathy (**Table 1**). The student cohort scored lower in the summary/strategy category, performing only 76% of the tasks correctly. This is primarily attributed to the fact that only 15% of the students correctly asked "the patient to briefly summarize their understanding of their medical situation and future direction." Most students summarized the visit for their patients rather than asking the patients to provide a summary. In the simulated patient encounter, students performed well in delivering bad news by completing a majority of the tasks on the SPIKES checklist. Many students who participated in this project reported that the individual educational modalities (didactic session and simulated patient experience) were beneficial in preparing them to deliver bad news. Students who had a positive experience with the simulation were more likely to have a positive experience with the didactic session. Similarly, students who viewed the didactic session as a positive experience were more likely to want more simulation experiences in the future. Although most students viewed the individual learning modalities as valuable, the benefit of an integrated teaching approach remains unclear. Future research is needed to explore the effectiveness of an integrated teaching approach compared to the current problem-based learning curriculum. Furthermore, students' confidence improved after completion of these exercises. The simulated patient experience and the didactic session provided the students with an opportunity to practice and improve this

important communication skill which may have contributed to their increase in confidence.

There were several limitations in the design of this curriculum improvement project that warrant further discussion. Participation was limited to first-year medical students at JABSOM, and the cohort was further limited by technological malfunction and students who did not consent to be video recorded. The project also utilized non-standardized simulated patients, who were volunteers rather than trained professionals. The inclusion of trained professionals would have helped standardize the encounter. Based on students' feedback, a video example with a trained medical professional to model the encounter and serve as an example would have been beneficial. It is also plausible that there was bias introduced during collection of the data because the authors participated in observation of the videos and scoring of the SPIKES checklist. It would have been ideal to have trained and experienced clinicians evaluate each video recording to limit possible bias because second-year medical students are still early in their clinical training and lack experience delivering bad news to patients. The authors acknowledge that there is a considerable degree of subjectivity and inter-observer bias in evaluating the medical students on some of the items on the SPIKES checklist because some of the items were not well defined. For example, each observer may have had a different threshold for defining what a student must do "to establish rapport" with their simulated patient. Using a post-experience questionnaire to assess students' pre-simulation experiences may have also biased their responses.

Additionally, this project evaluated medical students at a single point in their training and did not give students an opportunity to demonstrate and apply what they learned in a second simulated experience. Since students did not view their video recordings, it would be interesting to examine if the students would benefit from directly reviewing their performances to assess their strengths and weaknesses. As previously noted in the literature, observing video recordings of peers in a group setting could also help students learn techniques and approaches that they might utilize in future encounters.[2] Furthermore, it would have been beneficial to collect individual results with regard to the completion percentage of the SPIKES checklist, post-experience questionnaire, and end of unit exam to draw correlations for each student rather than the cohort.

Future studies may benefit from exploring the use of an integrated approach (PBL, didactic session, and simulated patient experience) in teaching and evaluating other clinical skills in the medical school curriculum with a focus on communication.

Pre-clerkship coordinators at JABSOM have incorporated aspects of this project's multifaceted learning approach to the current clinical skills curriculum. One factor to consider is the timing of this integrated teaching approach within the curriculum as the students who participated in this project were first-year medical students with little clinical exposure. Another aspect to explore would be how well medical students retain the knowledge learned from these educational exercises. Therefore, it would be interesting to evaluate if there is a decline in medical students' confidence in this skill throughout their training. Additional studies could incorporate the newly created 12-step S-P-w-ICE-S protocol that adds an additional step w "warning call & pause," and recognizes the non-linear fluid juggling of the 3 steps involving: I "providing information," C "clarifying and comprehension" checks, and E "exploring emotions and providing empathy." [13] This revised model describes a more specific and deliberate process that can be easily adapted to situations such as telephone or video visits, which would be especially relevant during this COVID era.[13]

Conclusion

Given the significance of delivering bad news to patients and the current gap in the medical school curriculum, more emphasis should be placed on developing this communication skill. This curriculum improvement project provided insight into students' perceptions of different teaching modalities and showed an increase in students' confidence in delivering bad news. Thus, this project may serve as an aid for medical educators in developing future curricula to teach communication skills.

Conflict of Interest

None of the authors identify any conflicts of interest.

Acknowledgements

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References

1. Buckman R. Breaking bad news: the S-P-I-K-E-S strategy. *Community Oncol*. 2005;2(2):138-142. doi:10.1016/s1548-5315(11)70867-1
2. Kiluk J, Dessureault S, Quinn G. Teaching medical students how to break bad news with standardized patients. *J Cancer Educ*. 2012;27(2):277-280. doi:10.1007/s13187-012-0312-9
3. Sobczak K, Leoniuk K, Janaszczyk A. Delivering bad news: patient's perspective and opinions. *Patient Prefer Adherence*. 2018;12:2397-2404. doi:10.2147/PPA.S183106
4. Gorniewicz J, Floyd M, Krishnan K, Bishop TW, Tudiver F, Lang F. Breaking bad news to patients with cancer: a randomized control trial of a brief communication skills training module incorporating the stories and preferences of actual patients. *Patient Educ Couns*. 2017;100(4):655-666. doi:10.1016/j.pec.2016.11.008
5. Berkey FJ, Wiedemer JP, Vithalani ND. Delivering bad or life-altering news. *Am Fam Physician*. 2018 Jul 15;98(2):99-104.
6. Paul C, Clinton-McHarg T, Sanson-Fisher R, Douglas H, Webb G. Are we there yet? The state of the evidence base for guidelines on breaking bad news to cancer patients. *Eur J Cancer*. 2009;45(17):2960-2966. doi:10.1016/j.ejca.2009.08.013
7. Dosanjh S, Barnes J, Bhandari M. Barriers to breaking bad news among medical and surgical residents. *Med Educ*. 2001;35(3):197-205. doi:10.1046/j.1365-2923.2001.00766.x
8. Eggly S, Afonso N, Rojas G, Baker M, Cardozo L, Robertson R. An assessment of residents' competence in the delivery of bad news to patients. *Acad Med*. 1997;72(5):397-9. doi:10.1097/00001888-199705000-00023
9. Rosenbaum M, Ferguson K, Lobas J. Teaching medical students and residents skills for delivering bad news: a review of strategies. *Acad Med*. 2004;79(2):107-117. doi:10.1097/00001888-200402000-00002
10. Johnson J, Panagioti M. Interventions to improve the breaking of bad or difficult news by physicians, medical students, and interns/residents. *Acad Med*. 2018;93(9):1400-1412. doi:10.1097/acm.0000000000002308
11. Garg A, Buckman R, Kason Y. Teaching medical students how to break bad news. *Can Med Assoc J*. 1997;156(8):1159-1164.
12. Baile W, Buckman R, Lenzi R, Glober G, Beale E, Kudelka A. SPIKES—a six-step protocol for delivering bad news: application to the patient with cancer. *Oncologist*. 2000;5(4):302-311. doi:10.1634/theoncologist.5-4-302
13. Meitar D, Karnieli-Miller O. Twelve tips to manage a breaking bad news process: Using S-P-w-ICE-S - A revised version of the SPIKES protocol [published online ahead of print, 2021 May 30]. *Medical Teacher*. 2021;1-5. doi:10.1080/0142159X.2021.1928618