Using Technology to Develop and Distribute Patient Education Storyboards Across a Health System

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Purpose/Objectives: To describe the successful implementation of a centrally designed and managed patient education storyboard project using Microsoft® PowerPoint® in a large multihospital system and physician-based practice settings.

Data Sources: Journal articles, project evaluation, and clinical and educational experience.

Data Synthesis: The use of posters, bulletin boards, and storyboards as educational strategies has been reported widely. Two multidisciplinary committees applied new technology to develop storyboards for patient, family, and general public education.

Conclusions: Technology can be used to coordinate centralized development of patient education posters, improving accuracy and content of patient education across a healthcare system while streamlining the development and review process and avoiding duplication of work effort.

Implications for Nursing: Storyboards are excellent sources of unit-based current, consistent patient education; reduce duplication of efforts; enhance nursing computer competencies; market nursing expertise; and promote nurse educators.

Key Points . . .

- ➤ Using readily available technology can streamline the development and distribution of educational materials, reduce duplication of efforts, and maximize available teaching resources.
- ➤ A clearly defined, collaborative development process and a project coordinator can make storyboards a cost-effective educational resource and expand their educational reach.
- ➤ Storyboards prepared in "page" sections can be adapted for other uses, including tabletop displays and flip charts.

Finding the time, resources, and supplies to develop patient education materials can be daunting for staff nurses, particularly as resources become more limited. Two committees, comprised of nurses, social workers, and other members of the multidisciplinary team, from the University of Pittsburgh Cancer Institute (UPCI) took a new approach to this challenge by using technology to develop and distribute storyboards for patient, family, and general public education. The Patient Education Working Group (PEWG), which focuses on systemwide patient education, in conjunction with the Cancer Awareness Committee, which focuses on community education, began developing 9- to 12-panel centrally distributed storyboards where patients with cancer are cared for across the University of Pittsburgh Medical Center (UPMC) Health System (see Figure 1). UPMC Health System serves a primarily English-speaking community and offers care in urban, suburban, and rural areas across western Pennsylvania.

The use of posters, bulletin boards, and storyboards as educational strategies has been reported widely in the literature. Much attention has been paid to the construction of posters, particularly for staff development and research presentations (Bach, McDaniel, & Poole, 1994; McCann, Sramac, & Rudy, 1993). Advantages of posters as educational strategies have been identified, including their low cost, portability, ease of update, and ability to allow self-paced learning (Duchin & Sherwood, 1990; Hayes & Childress, 1999; Healey & Hoffman, 1999; Thurber & Asselin, 1999).

More recently, the use of poster displays as "storyboards" for disseminating process or performance improvement has been reported (Hayes & Childress, 1999; Hetherington, 1999). Typically, storyboards have multiple panels that are read through in an organized way. PEWG and the Cancer Awareness Committee believed that the storyboard was broader than the traditional poster concept in that educational objectives and a systematic multidisciplinary team approach were used for development.

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Digital Object Identifier: 10.1188/04.ONF.131-135

Figure 1. Storyboard Displayed on a Nursing Unit Bulletin Board

The UPCI Storyboard Project grew out of several needs. The primary need was for the provision of consistent, current information to patients, family members, and the general public across 25 departments in 11 hospitals. Although most of the departments had bulletin boards that were designated for patient education, the timeliness and quality of the educational content and materials, as well as the visual appeal, varied greatly. Educational principles, such as attention to reading level, were reflected inconsistently.

Although staff members on some units tried to prepare displays that reflected the national cancer awareness topics of the month, others used their boards inconsistently or not at all. At the same time, more hospitals were offering educational programs or health fairs for their staff or communities. Information about cancer usually was requested for these events, but displays were limited and varied greatly among the hospital campuses.

"Rotating" bulletin boards, developed by clinical staff members and physically carried between the departments by volunteers each month, were used by the cancer center in the late 1990s. Although this process was effective for the five oncology units that were located in one building, it was not feasible when services expanded to different hospitals up to 100 miles apart. When PEWG and the Cancer Awareness Committee experienced similar challenges, they decided to collaborate on a project that would improve the quality of educational content and consistency of patient and public education displays. Because this project involved educational posters and also was a performance improvement initiative, the project was referred to as the Storyboard Project.

Implementation

A storyboard begins when a topic is identified. PEWG and the Cancer Awareness Committee both identified potential storyboard topics. The Cancer Awareness Committee identified and prioritized cancer awareness months, and PEWG identified other topics of interest. The suggested topics were compiled, and the committees prioritized topic development based on patient education needs. Table 1 lists the currently completed topics.

Table 1. List of Currently Completed Topics

Month	Designated Awareness Topics[a]	Recommended Patient Education Topics
January	Cervical cancer	
February	National donor day	Stem cell transplant
March	Colorectal cancer	
April	Cancer control month, prevention and early detection	Cancer fatigue and nutrition
May	Skin and melanoma	Sun safety
	Brain tumor awareness week	Clinical trials
June	Cancer survivors day	Site-specific survivor day activities
July	None scheduled	Food safety techniques for neutropenic patients
August	None scheduled	
September	Gynecologic cancer awareness month	
	Ovarian cancer	
	Leukemia	
	Prostate cancer	
October	Breast cancer	
	Lymphoma	
November	Lung cancer	It's time to be a quitter (smoking cessation)
		Help your patients to quit smoking[b]
	National marrow awareness month	Stem cell transplant
	Pancreatic cancer	
December	None scheduled	Caregivers
		Support groups
No designated month	Generic University of Pittsburgh Cancer Institute display	Evaluating health-related information
	Oral cancer	Insurance issues
		Teach us about how you feel (pain)
		Help patients who have pain[b]

[a] Not all topics have designated national awareness months. In addition, all topics may not be appropriate for all patient populations. Staff may prepare their own display for those months or elect to use an alternative topic.

[b] Companion professional education piece

Each storyboard topic was developed in the same manner. One person was identified to take responsibility for the topic. This person, usually an oncology nurse educator, served as the main contact, gathered all necessary information, and coordinated the review process. An effort was made to ensure that the appropriate multidisciplinary input was given on all topics. Nurses, physicians, social workers, and other healthcare personnel who are in-house experts on each storyboard's subject were asked to volunteer and assist with content and serve as reviewers. Oncology nurse educators facilitated the development process; served as resources on patient education principles, reviewers, and technology support; and assisted with distribution.

Storyboards were developed using Microsoft® PowerPoint®. This software package was selected because of its availability across the system and on many home computers. It offers a wide range of layout, text, and graphics options. The electronic files can be saved, quickly edited, and e-mailed to colleagues as part of the review process. Each PowerPoint slide is a "page," "tile," or section of the storyboard.

To assist developers, oncology educators also created a blank master storyboard in PowerPoint. The master copy serves as a template and includes nine pages for goals, objectives, time frames, target audience, general content outline, and an evaluation tool. For example, the disease-specific storyboard template included a page about risk factors, symptoms, prevention and early diagnosis, workup, treatment, and survival statistics. This helped to guide clinical staff through the development of a storyboard.

The cancer awareness storyboards followed a general outline as well. Each cancer-specific storyboard usually presented high-risk populations, prevention and early-detection suggestions, potential symptoms, general treatment options, questions to ask the doctor or patient education resource, and patient publications for more information. Two title pages were developed for each cancer awareness topic. One title page was used during the designated awareness month or specific event, whereas the separate, more generic title page was used during other months of the year or at health fairs. After the content was completed, graphics and color were added. Artwork enhanced visual appeal and readability and reinforced content.

Clinical experts reviewed all storyboards. The PowerPoint presentations were forwarded electronically to reviewers with instructions for the review process. Reviewers were asked to revise content based on the goals, objectives, and target audience for the storyboard. The process for returning comments was flexible. Reviewers provided feedback by e-mail, fax, mail, and phone comments to the primary contact person. If the reviewers had no major recommendations for content revision, the final storyboard was not reviewed again. However, if major content revisions were recommended, the final presentation was sent for an additional review.

As the content for the first few storyboards was being developed, so was the process for printing and distribution. The cancer education office coordinated the printing and distribution. The initial distribution list was developed by PEWG and the Cancer Awareness Committee and consisted primarily of areas that cared for patients with cancer. Revised distribution lists have included many other departments that expressed interest in the material after hearing about storyboards at systemwide patient education or consumer health library meetings or after seeing the storyboards displayed. Some storyboards may have a revised distribution list based on patient populations. As departments were added to the distribution list, they were asked if they preferred e-mail or hard copies of the final storyboard and how many copies they needed. Some larger departments required more than one copy.

A cost analysis showed that using the color printer in the cancer education office and buying color print cartridges was more economical than paying for color copies or the preparation of oversized (4' x 6') laser-generated posters in a print shop. With graphics and color, a high-quality color printer is required to print on site. Hard copies were mailed to any sites that did not have a high-quality color printer. Other authors also have determined that the internal production of posters using color printers can be more cost-effective than other production methods (Karamzadeh, Wong, & Crumley, 2002).

Before the printing process was initiated, an acknowledgment page listing all staff members who worked on the project and their roles was added to the presentation. Storyboards were distributed at least one month in advance of the designated month or event. E-mail announcements helped to focus attention on the topic, reviewed the intended use and time frame for display, reinforced any specific instructions related to use such as adding department-specific phone numbers or names of contact people, and suggested supplemental handouts.

Attaching the completed storyboard to e-mail allowed staff members to see the presentation. This step also served to complete the distribution process for staff members who can download the presentation for printing in another department, such as public relations or media service. Finally, a copy of the storyboard was placed in a public folder of UPMC's e-mail system. This allows all users to have access at all times and serves as an archive of past storyboards.

Once distribution began, other uses for the storyboards were identified. Storyboards also have been placed on poster board or foam core for use with easels in hallways and lobbies, in display cases, and in displays at health fairs, patient education centers and libraries, and support groups.

The design allowed storyboard components to be adapted on site to meet local needs. Departments added or removed information if it was not appropriate. For example, with the "survivors day" storyboard, hospitals displayed any information about their specific activities for cancer survivors. Once the actual survivors day activities were completed, the outdated panels were removed and the remaining content was used for the rest of the month celebrating cancer survivorship. For the storyboard on insurance issues, each department added the name, title, and phone number of someone patients could contact with insurance questions.

The evaluation, included as the last page of the PowerPoint file and shown in Figure 2, was structured as a one-page, fax-returnable tool that allowed staff to rate topic choice, ability to attain objectives, visual appeal, and length on a 5-point Likert scale. A handwritten comment section provided staff with the opportunity to suggest new topics and uses of the storyboard and give feedback about what worked and what needed to be improved.

Key: A—outstanding, B—satisfactory, C—fair, D—poor, NA—not applicable

How would you rate the overall presentation and effectiveness of this storyboard?	A	B	C	D	NA
How would you rate the relationship between the content and the storyboard topic?	A	B	C	D	NA

The storyboard information is

Just right | Too advanced | Too basic

The storyboard length is

Just right | Too long | Too short

How would you rate the following aspects of this storyboard?					
Organization	A	B	C	D	NA
Distribution	A	B	C	D	NA
Topic choice	A	B	C	D	NA
Visual appeal	A	B	C	D	NA
Adaptability	A	B	C	D	NA

What area do you represent?

Inpatient | Ambulatory care | Physician's office | Radiation therapy

How can we improve this program?

What topic would you like to see covered in future storyboards?

Figure 2. Sample of Evaluation Tool

Storyboards are reviewed on an annual basis. The review starts at least four months in advance. Oncology educators review and revise objectives, goals, target audience, time frame, and evaluations. In-house experts review the piece again to ensure that the content needs no changes. Based on their comments, revisions are made. Distribution of revised storyboards follow the same process.

Implications

A recently completed overall evaluation of the program showed that the biggest success has been that nurses at each site no longer need to develop similar bulletin boards. Nurses comment that this program does save time. They also were enthusiastic about the visual appeal and graphics.

One of the other big successes has been that other areas within the system have started to use the storyboards. The pain and smoking cessation committees have used these patient education storyboards in nononcology departments across the UPMC system to increase awareness about these two topics.

Several valuable lessons were revealed as the project grew. A large supply of color printer cartridges now is stocked so that the storyboards can be printed and distributed. Using too many detailed graphics (such as photos) and full-color backgrounds in storyboards should be avoided. These elements use up a color printer cartridge quickly and make some storyboards harder to read. Plain colored or fine business and special design papers make better printouts than using full-color backgrounds. Some pages, such as instruction, evaluation, and text-only pages, are copied on a regular copier and then collated with printouts from the color printer before distribution. As distribution grows, cost analysis may demonstrate that outsourcing color printing may be more economical. Departments now are encouraged to use sheet protectors to preserve displays. This allows the storyboard project to distribute only revised panels instead of full storyboards to all departments and preserves displays for future use.

One challenge that was experienced involved prioritizing topics. Using the nationally designated disease awareness months and coordinating other related patient education topics helped to solve this dilemma. For example, November is national lung cancer awareness month, so PEWG and the Cancer Awareness Committee choose this month to distribute the smoking cessation storyboard.

Another challenge included getting experts and reviewers to respond to requests for content or to review and blending comments from many reviewers on "hot" topics. Allowing reviewers to choose the review method that they were most comfortable with and best fit their work style helped to increase reviewer comments.

Ensuring that experts focused on readability and reading level helped when many comments were returned from reviewers. The goal was a sixth-grade reading level. Physician reviewers tended to give more information at a higher reading level. Educators rephrased information from reviewers into lower reading levels that were more appropriate for patient audiences.

Another challenge involved staff members who were uncomfortable working with computers. Computer skills, including the use of presentation graphics software, have been identified as a nursing informatics core competency for future practice (Gassert, 1998). Oncology educators developed a tip sheet to assist and mentor staff members who were interested in learning new skills. Staff members also have the option to attend computer classes on site. If a staff member was interested in developing content, he or she was asked to attend one of the computer classes. Others were asked to add the graphics. Credit was given to everyone involved with development of specific content.

When looking for pictures or graphic images, an institution's public relations department may have catalogs or libraries of purchased images for general and widespread use. Keep in mind that information and images may be copyrighted material. Before adding any images to a storyboard, staff members need to understand copyright rules (see Figure 3).

Public domain images are available for use for free. No permission is needed, but credit must be given to the source. On government Web sites, such as the National Cancer Institute's (www.cancer.gov), the information and images are public domain. Check each publication or Web site for details about use and how credit should be given.

Consumer evaluation of the storyboards is an ongoing challenge. The PEWG committee is working on this issue. Staff reported that the storyboards were effective using informal measures such as positive patient and family comments. They also noted significant increases in people standing and reading information on bulletin boards, taking related handouts, and asking appropriate questions.

Storyboards have been adapted for professional education and a variety of other uses. The success of the pain and smoking cessation storyboards has lead to the development of companion professional education storyboards that are used to educate staff about resources and hospital policy and help ensure compliance with regulatory agencies like the Joint Commission on Accreditation of Healthcare Organizations. The clinical trial storyboard now is being used in a public education lecture series. This has helped to provide consistency of information being presented and a readily available handout. Tabletop displays have been developed for office settings where wall display space is limited. Self-supporting flip chart displays were designed using three-ring binders and hook-and-loop tape; these were cost-effective and easy to put together. This project was very well received by patients and office staff and allows all the storyboards to be available for patients all the time.

Summary

By incorporating education principles, technology, and software, the storyboard project group has streamlined the

1. Check the source for details pertaining to existence of copyright.
2. Check the terms of use section on Web sites (or contact the Web master with specific questions).
3. For print material, always obtain written permission before using any commercial or other types of images. Clarify with sources how credit should be given.
4. Read the contract for details on how purchased images can be used.
5. Consult your organization's legal counsel for specific copyright questions.

Figure 3. Basic Guidelines for Considering Copyright Issues

development and review process and improved the visual appeal of patient education storyboards. Centralized development has improved the accuracy and consistency of education across the hospital system, avoided duplication of work, and provided a large selection of high-quality educational resources for all of the UPMC sites to use at any time.

We would like to recognize the efforts of the members of the UPCI PEWG and Cancer Awareness Committee, chaired by Kay Lowmaster, MSW, LSW, for their help in content development, review, and distribution.

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