

# Improving Safety in CT Through the Use of Educational Media

By Melisa Mattingly, MA, RT(R)(M)

## EXECUTIVE SUMMARY

- With a grant from the AHRA and Toshiba Putting Patients First program, Community Hospital in Indianapolis, IN set out to reduce the need for patient sedation, mechanical restraint, additional radiation dosage, and repeat procedures for pediatric patients.
- An online video was produced to educate pediatric patients and their caregivers about the diagnostic imaging process enabling them to be more comfortable and compliant during the procedure.
- Early information and results indicate a safer experience for the patient. The goal is for the video to become a new best practice tool for improving patient care and safety in diagnostic imaging.

**Approximately** 7300 CT procedures are performed each year on pediatric patients ages three through nine across the Indianapolis-based Community Health Network. Improving patient care and safety in all components of diagnostic imaging is the foundation of care provided to patients at Community Hospital in Indianapolis, IN. Pediatric patients are much more likely to move during the imaging process out of anxiety and/or discomfort—they simply do not recognize the importance of remaining in one position. As a result, they could receive additional radiation dosages due to the need for repeat scanning. The only way many pediatric patients can get through the CT examination is by sedation or mechanical restraint, which of course poses additional risk and discomfort. Community wanted to reduce the need for patient sedation, mechanical restraint, additional radiation dosage, and repeat procedures for pediatric patients.

By enabling pediatric patients to better understand the CT imaging process, radiation dosage can effectively be reduced, patient comfort will be improved, and the overall diagnostic experience will be safer. Furthermore, experts contend that a self-directed learning module fosters autonomy and allows the learner to work at his own pace and create his own relevant take home message.<sup>1</sup>

Online learning is advantageous because e-learners can review information as needed and easily test their understanding of the material.

To facilitate a better and safer patient experience, Community created an online video to educate pediatric patients and their caregivers about the diagnostic imaging process (focused on CT imaging). By incorporating audio, avatars, and animation through a user friendly computer program, patients would know what to expect of the imaging process and, therefore, be more comfortable and compliant during the procedure.

## Process

The formation of a team of stakeholders was the first step towards this goal. The team consisted of managers, educators, IT professionals, a pediatric nurse, and a medical physicist. Each person on the team brought a unique set of knowledge and skills necessary to produce a high quality product. The team based the idea of an Internet learning module on an existing model from the Starlight Children's Foundation, an organization dedicated to improving the quality of life for children with chronic and life-threatening illnesses and life-altering injuries by providing entertainment, education, and family activities that help them cope.<sup>2</sup>

The Starlight model was used as inspiration because it provided the patient and caregiver with necessary information in a format that would be friendly to children. The basic premise was to produce an on-line video that would be an educational program for patients and their caregivers to view either at home or at the hospital at any point before the scheduled imaging procedure.

The team began the project by focusing on the goal and clarifying the objectives. The overall goal of the program was to improve patient safety and comfort by increasing compliance during imaging. The group's target population was pediatric patients between the ages of three and nine years old, since the need is greatest among this age group and they would be most likely to use the program. However, the final product could be promoted to older pediatric patients and special needs patients. The team's objectives for the patient and/or the caregiver were that by the end of the video learning module, they would be able to recall the basic steps in CT imaging, verbalize concerns before imaging begins, and follow instructions from the technologist.

As the project progressed, the team broke up into several sub groups. The supervisor of the CT department developed the script while the IT experts researched programs that would facilitate development of the video. Editing of the script was done with the input of the entire team to ensure the appropriateness of the language for the age group as well as the inclusion of all relevant information. Once a computerized program for video production was selected and purchased for about \$400, the IT subgroup began developing characters, background, and animation that was represented in the script. Voice actors were selected to record the script. The team met several times to assist with editing the video content. The educators focused on the educational process while content experts critiqued the content and the pediatric expert kept the content focused to the target audience. The process took a couple of months.

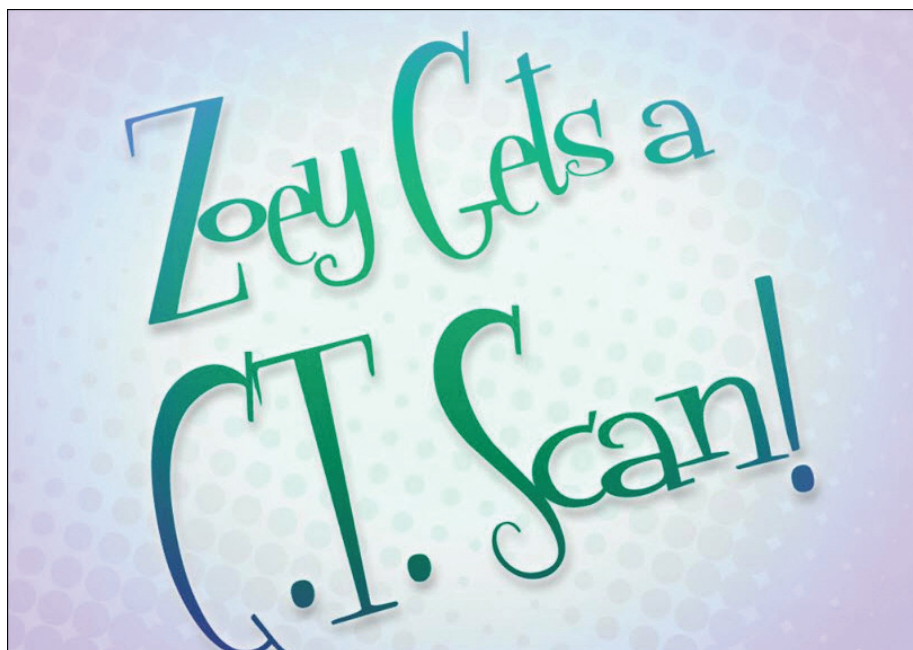


Figure 1 • Screen shot of "Zoey Gets a CT"

### The Final Product

The five minute video titled "Zoey Gets a CT" features a mother and daughter coming to the CT department for the daughter's CT. (See Figures 1–4 for screen

shots.) They are greeted by a friendly technologist who familiarizes the child and mother with the sights and sounds of the CT room including the equipment and how it moves, talks about the need

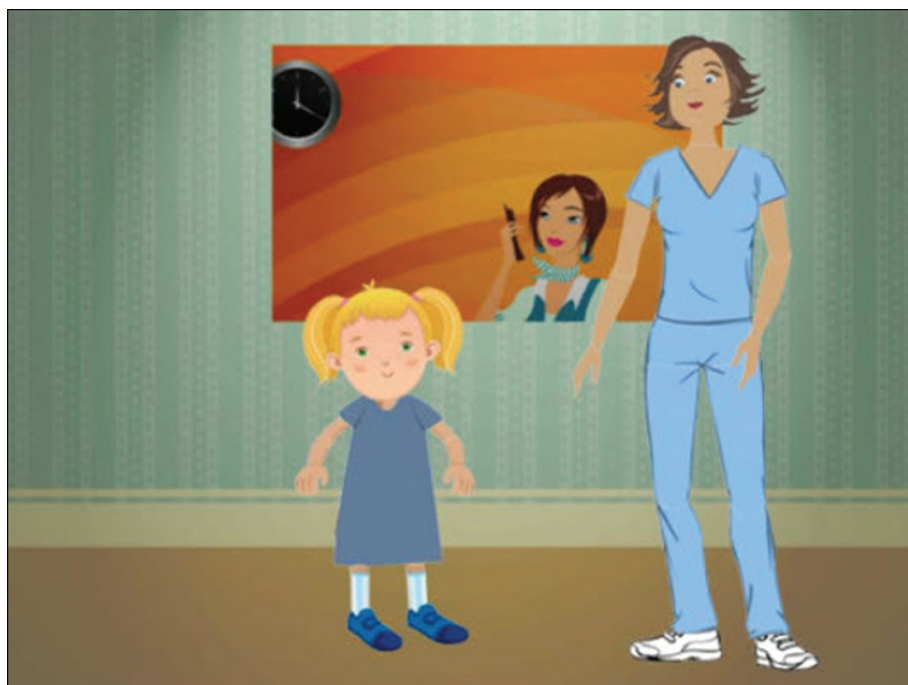


Figure 2 • Screen shot of "Zoey Gets a CT"

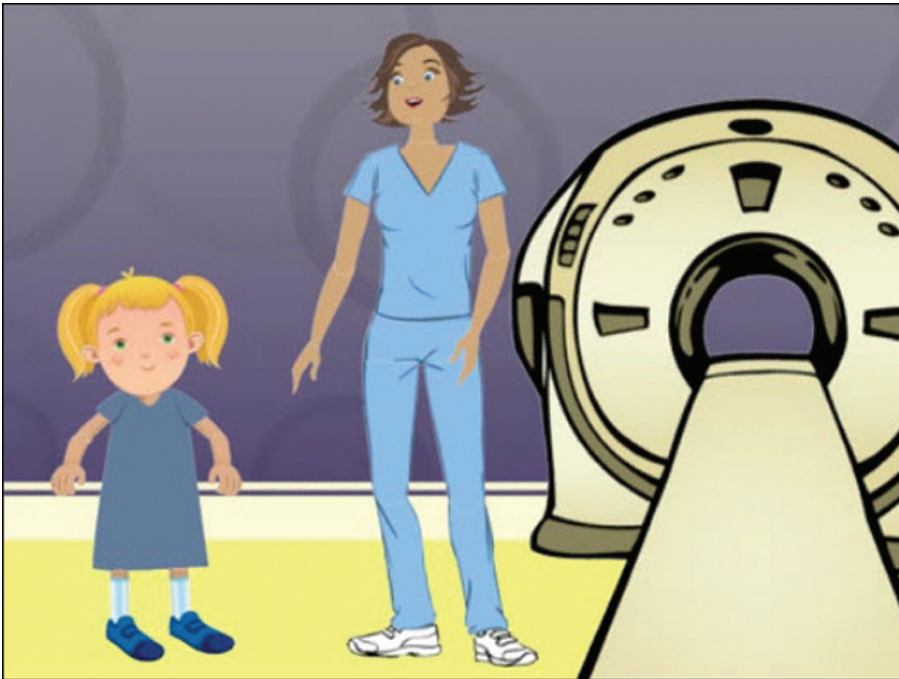


Figure 3 • Screen shot of “Zoey Gets a CT”

to wear a gown, and assures the child that her parent can be with her for every step. The technologist also discusses the need for a lead apron and talks briefly about the contrast that will be used. The video

allows the patient to select whether she is having a CT of the “tummy” or the “head” and provides the appropriate information based on the study selected. Animation emphasizes actions that take



Figure 4 • Screen shot of “Zoey Gets a CT”

place in the CT room and music keeps the topic lighthearted.

Before final editing, the video was shown during an open house event at Community Hospital East. Feedback from patients and caregivers was very positive. The final video was placed on the Community Hospital website where it would be accessible to patients, caregivers, physicians, and the general public. The video was also placed on computer kiosks at Community Hospital’s East and North campuses for easy patient access. The accessibility and self-directed approach enables users to work at their own pace and create their own relevant take home messages. It also allows patients and caregivers an opportunity to ask questions before becoming involved in the procedure.

“Zoey Gets A CT” was first made available to the inpatient pediatric units and medical imaging departments during the trial phase. Soon after, the video was advertised to the entire network as well as the public online through the organization’s homepage. Top administrators have promoted the video through email to physicians and staff. Additionally, the video will be showcased at Community Health Network’s Best in Class event in 2011.

## Outcomes

Data is collected by polling the CT technologists about their experiences with patients who watch the video and patients who do not watch the video. The data collected includes information about whether immobilization devices (chemical and/or physical restraints) were used, whether the exam needed repeats, and what questions the patients asked. As of this writing, the process has only been implemented for a short time, therefore data is limited. However, early data based on several questionnaires shows that patients who watched the video did not require repeat scans or chemical restraint.

Other anecdotal patient and parent feedback about the video has been very positive. One technologist reported: “Patient and mother very happy to see



video. The video answered all questions for mother taking care of special needs son." Another technologist reported: "Patient watched movie with parent and had no fear or questions when patient came in room & laid on scanner. Mother very happy with information." This age group seems to benefit from including the primary caregiver in the educational process.

## Conclusion

Early information indicates that, as a result of the education gained through the video, patient comfort and compliance has been improved, reducing the risk of patients moving during the procedure. Patients who might otherwise be unable to comply with a CT examination do cooperate more after watching the video, thus eliminating the need for repeated scanning and mechanical and chemical restraint. As a result, patients receive less radiation dose and less sedation resulting in a safer experience for the patient. The

project team hopes that as more data becomes available, the utilization of the video will become a new best practice tool for improving patient care and safety in diagnostic imaging. ☸

## References

- <sup>1</sup>Beitz, JM & Snarponis, JA (2006). Strategies for online teaching and learning: Lessons learned, *Nurse Educator*, 31, 20–25.
- <sup>2</sup>Starlight Children's Foundation. Resources and Education. 2011. Available at: <http://www.starlight.org/programs/>. Accessed February 22, 2011.

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*"Zoey Gets a CT" can be viewed online at <http://www.ecommunity.com/radiology/uploads/files/CTanimation/player.html>.*

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