“Accuracy, Shmaccuracy”

By Andrew Holtz, MPH

A

s any fiction writer will tell you, the story comes first. And so it is with TV shows that use medical backdrops for their teleplays. When writers meet to begin sketching out a new plot, the first order of business is determining fundamental mileposts of the story. What is the theme: loss, discovery, attachment? What do the key characters experience: career advancement, a new love, a death? What are the emotional notes of dramatic score: joy, sorrow, anger?

Then, as ER writer Lisa Zwerling notes, “We will brainstorm to come up with a good medical story that meets our dramatic needs.” Yet she and other writers at medical shows are emphatic that they care about the accuracy of their scripts.

Why? These shows are fiction, not documentaries or news reports. But part of the contract with viewers is that there will be enough realism to make the story believable. Maybe it’s extremely unlikely, but perhaps, just maybe, the key events could happen.

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“Absolutely. Otherwise you become a fantasy. Sure, we take liberties, but those liberties are still factually based,” says House writer Lawrence Kaplow.

This show lives in the world of the not-real world of TV, the hospital interiors of young doctors.

“As he notes, doctors not only advise writers of medical shows, they often are the writers. ER writer Lisa Zwerling is also pediatrician Lisa Zwerling, MD. In her fourth year with ER, she now practices part time. Her clinical work is both a source of inspiration and a reality check for her writing. For example, the choice of words a physician will use to deliver bad news to a patient.

“We try to be real when we think about how doctors really talk about this to patients, which is: you don’t try to sugar-coat reality. That’s one reason the show has real doctors on the writing staff,” Dr. Zwerling says. “Sometimes the non-doctor writers will say, ‘Gosh, would you really say that to a patient? Would you really say, ‘If this isn’t treated, you will die?’ And the answer is yes. We try to have the doctors on the show relate to patients the way we would relate to patients if we were working in the hospital. You want to be as compassionate and caring and supportive, and be as hopeful as you can in a realistic way.”

Physician-writers naturally want to be true to the craft they worked so hard to master—and they have to face the critiques of their colleagues. In addition, all the writers see letters from viewers who are personally affected by what they wrote.

“There are a lot of people who have these actual illnesses. When they watch the show and they hear about these illnesses, they are grateful, because sometimes the non-doctor writers will say, ‘Gosh, would you really say that to a patient?’ And the answer is yes.

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Like her counterparts at medical dramas, Bakken says the comedy writers and producers at Scrubs want to be realistic, to an extent, out of respect for their audience, including doctors who provide inspiration for storylines.

“We talk to these doctors and we want to be true to them and the stories they’ve told us and let us use. And why not be real?” Bakken says. “We’re not going to say that someone has liver dis... (continued on page 24)
Technology to Improve Colonoscopy Recognized by American College of Gastroenterology Award

By Paul Watson

A study that facilitated the creation of new software that can automatically and objectively analyze the efficacy of a colonoscopy was one of five abstracts selected for the American College of Gastroenterology (ACG) Governor’s Award for Excellence in Clinical Research.

The principal investigator, Piet C. de Groen, MD, Professor of Medicine at the Mayo Clinic, presented his findings during the President’s Plenary Session at the Annual Scientific Meeting.

The software in question enables physicians and technicians to digitally capture, store, and analyze a complete video stream file created during a colonoscopy.

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Cutting-edge Technology

During their research they created a workstation that digitally captures and stores the complete video file generated during a colonoscopy.

“They are superb computer scientists.”

By Paul Watson

In his abstract, Dr. de Groen stated, “When you get a colonoscopy, the procedure takes 20 minutes, we analyze about one image per second. If the procedure takes 20 minutes, we analyze about one image per second. At present we can analyze during a colonoscopy...”

Dr. de Groen noted that a significant number of large polyps and cancers are not detected during routine colonoscopy screenings, and that furthermore, no technology currently exists that can objectively assess a physician’s performance while conducting a colonoscopy.

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“Basically, what happens is that a physician looks at a screen that shows a live video stream recorded in digital format. A computer examines the same video stream recorded in video format as a series of images, about 30 images per second. At present we can analyze about one image per second. If the procedure takes 20 minutes, we analyze 1200 images. And from those images, we come up with a number of conclusions.”

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“Basically we wrote a whole series of algorithms that look at different aspects of what happens during a colonoscopy,” Dr. de Groen said.

More specifically, the software automatically extracts five objective quality-control algorithms, or metrics, from colonoscopy video files. Each metric analyzes a specific part of the colonoscopy procedure:

- Metric 1 measures the overall duration of the insertion phase, termed the insertional time.
- Metric 2 measures the duration of the withdrawal phase, termed the withdrawal time.
- Metric 3 measures the clear withdrawal time, defined as the duration of the withdrawal phase without out-of-focus frames.
- Metric 4 reflects the number of back-and-forth movements.
- Metric 5 includes fractions of Metric 3 that are spent on close inspections of the colon wall (off-axial or wall view) or global inspections (axial or lumen view).

The Educational Affairs Committee reviewed all approximately 1,480 abstracts submitted for presentation at the meeting, and the Governor’s Award is given to the one judged to be the best paper.

“We know that the quality of colonoscopy is variable across the nation and that enhancing the quality of colonoscopy, and thus the detection of colorectal neoplasia, will save lives,” she said. “In fact, continuous quality improvement of colonoscopy is earmarked as a national initiative for our College and other GI societies.”

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Dr. de Groen said, “A lot of the assessments are done retrospectively and depend on notes the physician took down during the colonoscopy.”

Currently, it is the physician conducting the colonoscopy who assesses the quality and efficacy of the screening.

“When you get a colonoscopy, the surgeon or endoscopist writes a report,” Dr. de Groen continued. “You just have to believe the report. There’s no objective data that actually verify what was done.”

Thus, Dr. de Groen set out to improve the quality of colonoscopies by creating technology that would aid a physician’s performance. To do so, he partnered with three computer scientists: Wallapak Tavanapong, PhD, and Johnny Wong, PhD, from Iowa State University; and JungHwan Oh, PhD, from the University of Texas at Arlington. Their collaboration for the study began in 2002 and was funded in part by a National Science Foundation grant for research into new methods of automated image analysis in endoscopy.

“A lot of credit for the success of this study goes to my three wonderful collaborating physicians,” Dr. de Groen said. “They are superb computer scientists.”

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