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The Power of Video Recording
Taking Quality to the Next Level

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In medicine, the problems of wide variations in quality and poor compliance with evidence-based care are well known. More education is not the solution for these problems. Knowledge is abundant, but implementation of knowledge often lags. This Viewpoint explores whether use of an existing technology, video recording of medical procedures, can improve quality of care.

Although the World Health Organization's hand washing declaration and aggressive global awareness campaign has been long established, behavior change among health care workers remains a persistent struggle. For instance, at Long Island's North Shore University Hospital, hand washing compliance rates were consistently low despite educational efforts. In response to these low rates, the hospital took an assertive approach to solving the problem by installing cameras to monitor hand washing rates. The outcome data were reported to the staff and as a result, compliance increased from 6.5% to 81.6%,[1] demonstrating the potential power of this technology in the medical setting.

The concept of measuring quality for learning is not a proposal to rewire hospitals and install cameras, but rather, a consideration that many applicable activities and procedures are already video based. For example, procedures ranging from cardiac stent placement to arthroscopic surgery are performed using sophisticated video equipment; however, the record button is often turned off. The potential to harness the data in these videos and drive quality improvement may be substantial.

At Indiana University, Rex et al[2] decided to use the recording feature of colonoscopy video equipment to address the long-standing problem of quality variations in colonoscopies. Over several months, the investigators performed a blinded review of 98 colonoscopy videos performed by 7 gastroenterologists who were unaware that their procedures were being recorded. Procedure quality scores and mucosal inspection time data were collected based on established criteria. Wide variations in quality were found. The researchers then informed the gastroenterologists that their procedures were being video recorded and peer reviewed. Following the announcement, mean inspection time during colonoscopy increased by 49% and quality of mucosal inspection improved by 31%,[2] suggesting a substantial improvement in quality because of the Hawthorne effect.

Peer review of videos can also enhance existing quality improvement efforts.[3] For example, procedure videos can better inform morbidity and mortality conferences and sentinel event root-cause analyses that have traditionally relied on the notes of clinicians, which can be limited and even biased. Moreover, the exportability of video files can facilitate external review, allowing a peer reviewer removed from a local department's politics to advise on what could have improved.

In addition to reviews triggered by patient harm, video recording also offers a valuable opportunity for coaching. In the same way that athletes learn from coaches when jointly watching videos of past games, physicians can also learn from their performance by viewing with a coach. At the Brigham and Women's Hospital,[4] a coaching program was developed in which surgeons spent 1 hour reviewing their procedure videos with an expert. The video-based peer review informed the surgeons about alternative approaches to problems they encountered during their operations and how they could be more efficient. The expert reviewer also suggested ways to better position the patient, surgical assistants, the surgeon, as well as the surgical retractors for optimal exposure. All of the surgeons who participated in the program found the personalized feedback to be valuable.[4] Such video-based quality improvement intiatives could be offered remotely and even draw on the collaborative efforts among multiple institutions in a patient safety organization. Developing independent coaching networks will require an investment by hospitals, professional physician associations, and a new infrastructure, but the potential reward of improving procedure quality and safety may be substantial.

According to the 2012 Institute of Medicine Best Care at Lower Cost report, unnecessary medical care may account for as much as 30% of US health care expenditures.[5] Unnecessary procedures represent an important component of this problem, with major potential for reducing both pre-

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ventable harm and wasteful spending. To highlight this problem, in 2011, a cardiologist was dismissed from a community hospital and his medical license revoked, at least in part because of claims that he placed approximately 600 cardiac stents that might have been unnecessary.[6] In this case, if the procedure video equipment that was already in use had recorded the procedure, and patients were given a copy of the video on a thumb drive, second opinions and even patient reviews may have detected this overtreatment much earlier. Transparency through video recording in medicine may help to decrease waste in health care through increased accountability.[7]

Even for appropriate procedures, saving a video of the procedure could be valuable for future physicians when treating a patient. Surgeons may benefit by watching a patient's archived video of their last procedure. A physician's operative note in the patient's chart is often brief and does not capture the details of a video. Given the modern capacity for data storage, incorporating procedure videos into a patient's electronic health record could be considered as routine as keeping computed tomography (CT) scan images. Similarly, a surgeon would not operate on a tumor or bone fracture based solely on a written radiology report without personally viewing the film images. Just as it is expected that radiology images are stored and retrievable for patient care, procedure videos also can be stored and retrieved for this purpose.

Patients also appear to support the idea of having their procedures recorded. In one study in which 248 patients were asked if they would be interested in receiving a video of their procedure, 81% said yes and 61% were willing to pay for it.[8] Sharing videos with patients may be associated with improved patient satisfaction because doing so embodies a broader spirit of medical transparency.

Video recording of procedures also might help address the chronic problem of disruptive behavior in medicine. In a study of 50 hospitals, 86% of nurses and 47% of physicians reported witnessing disruptive behavior by physicians and nurses.[9] A camera in a procedure room can increase accountability for disruptive behavior in the same way that some hospitals currently use cameras to monitor cleaning staff when turning over rooms between procedures. In addition, many physicians do not use procedure checklists despite their well-established benefit.

There are, of course, some important boundaries to video recording for quality improvement. Patients must be informed that their medical procedure will be recorded and given the option to decline. If they opt to receive a copy of their procedure video, they should be properly informed about what to expect so that the known imprecisions intrinsic to medical procedures that are within the standard of care do not cause false alarm. For hospitals concerned about the medical-legal risk exposure of recorded videos being discoverable in a potential malpractice claim, they have the option to declare a priori that videos are recorded solely for quality improvement purposes, and thus they are likely not discoverable by plaintiff's attorneys in the same way that morbidity and mortality conference proceedings are not discoverable. However, past predictions of a malpractice lawsuit avalanche when CT and magnetic resonance imaging (MRI) scan images were about to become available to patients proved not to be true. Today, CT and MRI images are accessible to all patients who request them in the spirit of full medical transparency.

In the new era of data storage, the adoption of video recording to improve quality and safety should be more widely implemented. Based on early observations, this approach also could help drive quality improvement to the next level.

Published Online: April 1, 2013. doi:10.1001/jama.2013.595
Conflict of Interest Disclosures: The author has completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and reports receipt of royalties from Bloomsbury Press for publication of a book and participation in a study on patient safety funded by the American International Group.

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