Considerations for Use of Dental Photography and Electronic Media in Dental Education and Clinical Practice

Jane C. Stieber, DDS, MSD, MPH; Travis Nelson, DDS, MSD, MPH; Colleen E. Huebner, PhD, MPH

Abstract: Photography and electronic media are indispensable tools for dental education and clinical practice. Although previous research has focused on privacy issues and general strategies to protect patient privacy when sharing clinical photographs for educational purposes, there are no published recommendations for developing a functional, privacy-compliant institutional framework for the capture, storage, transfer, and use of clinical photographs and other electronic media. The aims of this study were to research patient rights relating to electronic media and propose a framework for the use of patient media in education and clinical care. After a review of the relevant literature and consultation with the University of Washington’s director of privacy and compliance and assistant attorney general, the researchers developed a privacy-compliant framework to ensure appropriate capture, storage, transfer, and use of clinical photography and electronic media. A four-part framework was created to guide the use of patient media that reflects considerations of patient autonomy and privacy, informed consent, capture and storage of media, and its transfer, use, and display. The best practices proposed for capture, storage, transfer, and use of clinical photographs and electronic media adhere to the health care code of ethics (based on patient autonomy, nonmaleficence, beneficence, justice, and veracity), which is most effectively upheld by a practical framework designed to protect patients and limit institutional liability. Educators have the opportunity and duty to convey these principles to students who will become the next generation of dentists, researchers, and educators.

Dr. Stieber is a pediatric dentist in private practice in Petoskey, Michigan; at the time of this study, she was a Resident in Pediatric Dentistry, School of Dentistry, University of Washington; Dr. Nelson is Clinical Assistant Professor, Department of Pediatric Dentistry, School of Dentistry, University of Washington; and Dr. Huebner is Professor, School of Dentistry, University of Washington. Direct correspondence to Dr. Jane C. Stieber, Department of Pediatric Dentistry, School of Dentistry, University of Washington, 6222 NE 74th St., Seattle, WA 98115; stieberj@umich.edu.

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ommunication in modern life relies heavily on digital media and technology. For example, over 50% of cell phone users in the United States take photographs or videos on their phone.\(^1\) In 2013, four of the top 15 most popular free iPhone apps (YouTube, Instagram, Facebook, and Twitter) pertained to photo- and video-sharing.\(^2\) YouTube hosts over one billion unique users per month, and these users upload over 100 hours of video every minute.\(^3\) The ability to easily, cheaply, and frequently share images has revealed fallibility in one of the truest of truisms: a picture is no longer “worth a thousand words”; a picture has replaced a thousand words.

U.S. dentists realized this long ago. Dentists were among the first health practitioners to use clinical photography, beginning with a dentist-turned-photographer who opened the first photographic gallery in 1840.\(^4,5\) Clinical photography in dentistry has since become an indispensable part of dental education, and over the years, dental professionals have realized its distinction from casual photography. In the modern era, the ability to capture, store, and transmit digital images almost instantaneously revolutionized communication and led to a dramatic increase in the use of electronic media in clinical care and education.\(^6\) As a result, students, educators, and clinicians have become accustomed to viewing high-quality images and videos. Multimedia educational tools are increasingly used in place of conventional teaching approaches.\(^7\) Consequently, demand has increased for medical and dental images.\(^8\) While these changes are generally positive, they pose potential threats to patient rights and privacy if appropriate protection measures are not taken. Therefore, it is essential that ethical and legal obligations to patients...
be upheld as a core component of educational policies on clinical media.

Although previous research has focused on privacy issues and general strategies to protect privacy when sharing clinical photographs for educational purposes, to our knowledge there are no published recommendations for developing a functional, privacy-compliant institutional framework for the capture and storage of clinical media. Our clinical department at the University of Washington School of Dentistry was no exception. Our department has a long history of clinical and educational patient media use, but while we make every attempt to adhere to ethical and legal principles, a framework for media use did not exist prior to this project. The lack of a systematic approach to the use of patient media impeded our responsibility to consistently guarantee the protection of patient rights. The aims of this study were therefore to research patient rights relating to electronic media and propose a framework for the use of patient media in education and clinical care.

Methods

To identify issues related to patient rights and electronic media, we used a step-wise process. First, we completed a review of the literature on patient right issues pertaining to use of clinical photography and electronic media in education and clinical care. Then, we discussed these issues with our institution’s director of privacy and compliance and assistant attorney general. These experts assisted us in determining how issues of patient privacy can be applied practically in an institution. Using this information, we developed a privacy-compliant framework that can be used to ensure appropriate capture, storage, and transmission of clinical photography and electronic media.

A PubMed search was conducted in January 2014 of publications from 1995 to 2014. Using the keywords “privacy,” “consent,” and “clinical photography,” we found 11 articles. These articles were assessed for relevance. We then conducted a hand search of the reference lists to determine additional relevant articles.

Results

Based on our reading of these articles, we arrived at several definitions from which we developed a four-part privacy-compliant framework for patient media. An “identifiable photograph” is any photograph that identifies the individual or any photograph by which there is reasonable basis to believe the information can be used to identify the individual. When considering whether a photograph is identifiable, it may be helpful to ask two questions: is there any basis to believe that the average, non-dentally trained person could use this photograph to identify the individual? and could the patient in the photograph or video identify himself or herself in this photograph or video? If the answer is yes to either of these two questions, it is likely the image constitutes protected health information (PHI). A final determination can be guided by the institution. For instance, the only photographs specifically defined as identifiable by our institutional policy are “full face photographic images and comparable images.”

A “non-identifiable photograph” is any photograph that does not fit the description of an identifiable photograph. A “de-identified photograph” is any photograph that was identifiable in its original form but has been altered to become a non-identifiable photograph. A “re-identifiable photograph” is any photograph that has been de-identified but may become identifiable as a result of restoration of the photograph to its original, identifiable form or by linkage to specific patient identifiers.

Four-Part Privacy-Compliant Framework

Patient autonomy and privacy. The Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule of 1996 marked the first set of national standards for PHI, “individually identifiable health information,” or “protected health information maintained or transmitted in any form or medium.” Under the privacy rule, PHI includes any information that relates to “the individual’s past, present, or future physical or mental health condition” and “that identifies the individual or for which there is reasonable basis to believe it can be used to identify the individual.” PHI can exist in any form, including verbal, written, and electronic. By this definition, a clinical photograph or electronic recording may qualify as PHI.

According to the HIPAA privacy rule, clinical photographs and videos should be considered a part of patients’ medical records and are subject to the same consent, confidentiality, and security as any other part of their records. This practice underscores the maintenance of patient privacy and dignity as
a central principle of ethical medical practice.\textsuperscript{13-15} Patients have a fundamental right to autonomy (personal choice) over how their personal information is collected and used. Protection of a patient’s autonomy therefore requires proper safeguarding of PHI, including dental photographs and other electronic media.\textsuperscript{16,17}

**Obtaining informed consent.** Informed consent as defined by Beauchamp and Childress is “giving informed consent to an intervention if (and perhaps only if) one is competent to act, receives a thorough disclosure, comprehends the disclosure, acts voluntarily, and consents to the intervention.”\textsuperscript{18} This definition implies that patients are competent to make health-related decisions and that messages are delivered in a manner that can be reasonably understood. In situations in which an individual is not personally autonomous (such as when the patient is a child or developmentally disabled), parents and caregivers must be informed and provide appropriate consent and, whenever possible, the patient should provide assent.\textsuperscript{17}

While it is universally recognized that patients must provide consent for publication whenever there is a possibility they could be identified, we found no consensus on specific consent requirements. Many journals require that photographs be accompanied by written proof of informed consent. However, other journals only require that authors attest that it was obtained.\textsuperscript{8,18-20} Recognizing this grey area, the clinical photography and medical illustration literature offers suggestions for best practices in addressing patient privacy and informed consent.\textsuperscript{21}

Guidelines suggest that, first and foremost, clinicians should refrain from photographing the entire body or face whenever possible. The practice of blurring identifying characteristics or blocking out eyes has become commonplace when it is necessary to display a greater portion of the patient’s body.\textsuperscript{22} In the modern era, instead of this imperfect practice of disguising identities, clinicians should consider requesting consent from all patients for photography whether or not they can be identified from the photograph.\textsuperscript{3,12,22,23} The guidelines state that consent should include an explanation of the purpose for which the media is to be used, how it will be displayed, to whom it is likely to be shown, how the patient’s privacy will be protected, and how long the images will be retained.\textsuperscript{23,24} Once a piece of media is posted to the Internet, it is practically impossible to control its use. Therefore, if the piece of media is planned to be used in electronic forum, this should be specifically disclosed to the patient in a consent form for “electronic publication.”\textsuperscript{16}

**Capture and storage.** In order to protect patient rights, it is important that the security and privacy of patient data be maintained from the time that they are captured. Once a patient’s image is recorded, the file is generally stored in an electronic format. Often this is a memory card or other storage device associated with a camera. Best practice stipulates that images should be stored in such transitional locations for short periods only.\textsuperscript{23}

**Transfer, use, and display.** Once transfer to a more permanent location is complete, access should be limited to authorized individuals. This can be easily accomplished by using a password-protected database. Caution should be employed when smartphone-based cameras are used for clinical photography and video. If they are used, it is imperative that the device have strict security settings in place. When images are transferred, clinicians should ensure that electronic security measures are employed, media are transferred confidentially, and files are transmitted only to individuals who have a legitimate right to see them.\textsuperscript{21}

**Implementation of the Privacy-Compliant Framework**

We developed the following functional electronic media framework for use in our institution, based on considerations discussed in the previous section. This description outlines steps taken to develop our departmental electronic media library, which could be extrapolated to other institutional and clinical settings (Figure 1).

**Patient autonomy and privacy.** Patients have the right to choose whether or not to have their image captured on photograph or video. This choice should not impact the quality of clinical care they receive. They also maintain the right to have the least amount of PHI captured and stored as is necessary for clinical or educational purposes.

**Obtaining informed consent.** All photographs and digital media included in an electronic library pertain to current or former registered patients of the institution. The decision to obtain informed consent is based on the intended use of the media and whether or not the subjects are identifiable. Prior to receiving care at our institution, all patients (or their parents for minors) sign a care agreement stating that “Images, such as x-rays, photographs, and/or videotapes or other images of you, may be used for diagnosis,
treatment, and/or educational purposes. These images will become part of your dental record.” The signing of this document by a patient or caregiver forms the basis for the informed consent recommendations presented here.

We developed three categories for informed consent (Figure 2): 1) recommended but not required: use of non-identifiable electronic media in clinical care or education in our institution; 2) strongly recommended but not required: use of identifiable electronic media in clinical care or education in our institution, and educational use of non-identifiable media outside the institution; and 3) required: educational use of identifiable electronic media outside our institution. Informed consent is obtained from the patient (or caregiver for a minor) using the “Patient Authorization for UW School of Dentistry to Use or Disclose Protected Health Information for Publicity Release” form. There is no end date restricting how long the institution can use the agreed-upon photos, but the patient always has the right to revoke authorization.26 Once the release form is signed, it is scanned into the patient’s electronic chart. The original, paper release form is archived in accordance with state law.

Capture and storage. Electronic media are captured by the contributor using a digital camera or other recording device and initially stored on an encrypted secure digital memory card. Any institutional workforce member, including but not limited to a faculty member, employee, volunteer, trainee, or student, may obtain consent for and capture a photograph that the member wishes to contribute for educational or clinical use. All contributors must be trained in HIPAA. Once the electronic media are captured and initially stored, the contributor prepares them for educational or clinical use using the following steps: 1) place the media in the institution’s shared drive in a folder labeled with the patient’s chart number; 2) place the scanned signed release form in the same institutional shared folder; 3) submit the hard copy release form to the institutional archive; 4) submit descriptive information about media to the institution’s shared drive (including image name, verification of consent, contributor’s first and last names, media title, media category, and three keywords or phrases); and 5) flag files without accompanying informed consent or incomplete documentation for discussion with the contributor. Noncompliance is addressed on a case-by-case basis.

Transfer, use, and display. Once the items listed in the previous section are placed in the institutional shared drive in a folder labeled with the patient’s chart number, the designated electronic media manager is responsible for the following: 1) verifying that proper consent was obtained; 2) facilitating upload of photographs and accompanying descriptive information into the desired clinical or educational repository; 3) emailing contributors to confirm receipt of submission, identify deficiencies in submission, and report acceptance for clinical or educational use; and 4) auditing the shared drive and repositories periodically. Upon receipt of all new submissions, the electronic media manager transfers all submitted files to a private folder accessible only by her on the shared drive to avoid either intentional or unintentional manipulation of the files by individuals other than the contributor.

To ensure that timely transfer of recorded media to the shared drive and subsequent deletion of files on individually encrypted media cards are occurring, the electronic media manager also is responsible for conducting periodic audits and purges of capture devices and media cards. To improve compliance, such audits may be expanded to each step of the framework.
Repealed and/or intentional non-compliance with the framework may mandate additional continuing education in ethical and patient rights issues and/or suspension of clinical privileges.

**Discussion**

Institutional and departmental policies for the appropriate use of clinical photography and electronic media are risk-management tools designed to protect patients from harm and limit institutional liability. By employing a proactive and practical framework for responsible electronic media practice, risks of breach of confidentiality and unauthorized use are minimized. Although the word “institution” connotes an image of a dental school or other large organization, we use this word to refer to any entity involved in patient care. This institutional framework may therefore be applied to a range of patient care settings, including private practice, community clinics, hospitals, and dental schools. Addressing specific compliance issues is beyond the scope of this study. Rather, our intent was to outline issues that should be considered when using electronic media and to describe how they were applied practically in our institution.

Some might speculate that the more deliberate and stringent approach to consent recommended by the framework would lead to higher rates of patient refusal. We do not believe this to be the case. The existing published evidence shows that when the appropriate informed consent practices are implemented, patients continue to consent for use of their images at high rates. In fact in one study, 85% of patients continued to give consent for publication of their images despite explicit discussion of the possibility of the image becoming available on the Internet.

Use of media that contain patient images and information presents a significant medicolegal risk. In recent years, physicians have been investigated by medical boards for improper use of patient-identifying data, such as upload to public Internet.
forums. In general, use of unclear and poor quality practices may strengthen a plaintiff’s potential legal action. Therefore, the best approach to limit liability is to adhere to excellent capture, storage, transfer, and usage policies. When clinicians maintain an unambiguous record of informed consent in their patients’ medical records, they significantly reduce the risk of disciplinary or legal action.

Conclusion

The use of electronic media has increased dramatically and is now a prevalent and desirable component of modern education and clinical practice. In clinical education, images, audio, and video recordings frequently feature patients. This usage constitutes PHI, which must be protected. The issues outlined in this article are important to any clinician or educator who captures or works with photographs or other electronic media of patients. Schools, hospitals, academic departments, and individuals must develop policies to ensure that patients’ rights are maintained and their dignity is respected. The heart of such policies is a profound respect for autonomy, privacy, and informed consent for the use of patient images and likenesses.

For institutions or departments that lack an established electronic media policy, this article provides a framework that comprehensively addresses the practical protection of patient rights. Best practices for handling of clinical photographs and electronic media adhere to the health care code of ethics, based on patient autonomy, nonmaleficence, beneficence, justice, and veracity. We agree to uphold these tenets in exchange for the privileges we enjoy as health care professionals. Capturing, storing, and sharing the likeness of another person is a privilege, which must be preserved and protected through ethical, legal, and practical conduct. Educators have the opportunity and duty to convey these principles of best practice to students who will become the next generation of dentists, researchers, and educators.

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