

Practice Guidelines for Tele dermatology

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Abstract

Previous American Telemedicine Association (ATA) Tele dermatology Practice Guidelines were issued in 2007. This updated version reflects new knowledge in the field, new technologies, and the need to incorporate tele dermatology practice in a variety of settings, including hospitals, urgent care centers, Federally Qualified Health Centers, school-based clinics, public health facilities, and patient homes.

Keywords: dermatology, education, tele dermatology, telemedicine

Preamble

The American Telemedicine Association (ATA) brings together diverse groups from traditional medicine, academia, technology and telecommunications companies, e-health, allied professional and nursing associations, medical associations, government, military, regulatory, and others to address and advance compliance with legal, ethical, and professional standards in the practice of telemedicine.

ATA has embarked on an organized effort to establish guidelines for the practice of telemedicine in various clinical applications to assure uniform quality of service for patients and providers, to enhance patient experience, and to enable providers to deliver appropriate care. The guidelines are developed by panels that include experts from the field and other strategic stakeholders, and are designed to serve as a standard reference and educational tool for professionals to provide appropriate care for patients. The process for developing these guidelines is based on professional consensus and a rigorous review, including open public commentary period, with final approval by the ATA Board of Directors. Guidelines are reviewed and updated periodically.

The purpose of these guidelines is to assist providers in pursuing a sound course of action in providing effective and

safe medical care that is founded on current scientific knowledge, technological requirements, and patient needs. Safe and effective practice requires technical training, professional knowledge and skill, and explicit processes, as described in each document. All guidelines issued by the ATA are properties of the ATA. Any modification or reproduction of the published guideline must receive prior approval by the ATA.

Compliance with these guidelines alone will not guarantee accurate diagnoses, appropriate clinical treatment, or optimal outcomes. A divergence from the guidelines may be indicated under certain conditions, such as emergency situations in places with limited resources that call for prompt action to attend to the patient. Similarly, technological advances may alter prevailing practices or provide new and expanded opportunities.

The technical and administrative guidelines in this document do not purport to establish binding legal standards for delivering telemedicine services. They are based on the accumulated knowledge and experience of the ATA workgroups and other professionals.

- The previous ATA Teledermatology Practice Guidelines were issued in 2007. This is the revised version reflecting new knowledge in the field, new technologies, and the need to incorporate teledermatology practice in a variety of settings, including hospitals, urgent care centers, Federally Qualified Health Centers, school-based clinics, public health facilities, and patient homes.

Scope

The teledermatology guidelines apply to individual providers, group and specialty practices, hospitals and healthcare systems when providing services via information and communication technology (ICT) as a substitute for or an adjunct to in-person care.

The users of these guidelines are urged to review and comply with professional guidelines within their domain of practice as they pertain to prevention, diagnosis, treatment, and follow-up of skin disorders.

These guidelines pertain primarily to healthcare providers and patients located in the United States (U.S.). When either or both parties are not within the jurisdiction of the United States, applicable local guidelines and protocols take precedence according to the rules of prevailing jurisdictions.^{1,2}

The guidelines address three aspects of service delivery: clinical, technical, and administrative. Under each set, the guidelines are classified according to four levels of adherence:

- “Shall,” indicates required action or adherence whenever feasible and/or practical.

- “Shall not” indicates a proscription or action that is strongly advised against.
- “Should” indicates a recommended action without excluding others.
- “May” indicates pertinent actions that may be considered to optimize the telemedicine encounter.

Introduction

The practice of dermatology is particularly suited to telemedicine because skin disorders are visible to the human eye, and clinical information can be acquired, stored, and transmitted for accurate diagnosis and appropriate treatment in the majority of cases. Cases that require biopsy can also be identified and appropriate referral initiated promptly. The practice of teledermatology can alleviate the maldistribution of specialty care and enable patients not located in the geographic proximity of expert resource to receive care. The following guidelines are designed to establish coherent, effective, safe, and sustainable standards for the practice of teledermatology.

The guidelines cover three areas, reflecting the processes associated with most teledermatology consultations: Clinical Practice, Technical Requirements, and Administration. They may be used together with the Core Operational Guidelines for Telemedicine Services Involving Provider-Patient Interactions, and ATA Practice Guidelines³ for Live On Demand Primary and Urgent Care (2014).⁴

These guidelines pertain to the three modes typically used for teledermatology: store-and-forward (S&F) or transmitting digital images and associated patient data to the specialist for consultation at a later time; real-time video teleconferencing (VTC) in which providers and patients interact via live videoconferencing; and hybrid (utilizing both S&F and VTC).

There is a growing body of evidence regarding the effectiveness of synchronous and asynchronous teledermatology for a variety of skin disorders that present in diverse practice settings, including emergency departments, hospitals, patient homes, schools, chronic care facilities, the workplace, and the military.

Teledermatology has been found to be reliable for accurate diagnosis and treatment plans for skin disorders.⁵⁻⁴¹ With some exceptions, the preponderance of the evidence confirms the diagnostic accuracy of teledermatology compared to in-person encounters,^{9,13,21,28,29,41-48} as well as management/treatment recommendations.^{6,11-13,15,21-23,25,26,28-31,33,37,43,45-53}

Clinical outcomes and quality-of-life measures are similar as well for telemedicine and in-person care.⁵⁴⁻⁶⁴ Moreover, patients, referring clinicians, and dermatologists have expressed high levels of satisfaction with teledermatology,^{15,23,33,34,38,65-79}

as it facilitates access to dermatologic expertise for patients who are geographically or logistically challenged.

Practice Guidelines

In teledermatology, S&F communication typically refers to the sending or forwarding of digital images and associated patient data to the specialist for storage and consultation at a later time. For real-time VTC, providers and patients interact via live videoconferencing. These recommendations apply to S&F, VTC, and hybrid (utilizing both S&F and VTC) modes for teledermatology.

CLINICAL PRACTICE GUIDELINES

Many skin conditions lend themselves to a telemedicine consult as defined in this document. Typically, these include conditions for which there is reasonable certainty of establishing a diagnosis and generating a treatment plan on the basis of visual information and access to a medical record. The ultimate decision for a teledermatology consult is made by the patient, the referring provider, and the teledermatologist.

These guidelines define appropriate conditions and parameters for the safe and effective practice of telemedicine on current evidence. They are not intended to substitute for independent medical judgments that pertain to individual circumstances.

Both referring providers and consultants (hereafter referred to as providers) shall exercise their professional judgment regarding the appropriateness of telemedicine on a case by case basis, taking into account the presenting condition, their ability to make a definitive diagnosis, and their comfort and expertise. Providers shall observe relevant practice guidelines and position statements developed by the American Academy of Dermatology and other related professional organizations.

Preliminary considerations

PATIENT-PROVIDER RELATIONSHIP. Providers shall conform to all applicable state and federal regulations that pertain to the practice of medicine, including the establishment of a provider-patient relationship and the appropriate conditions for making diagnostic and treatment decisions—including prescribing. If the patient does not have a primary care provider, the consulting provider should recommend appropriate options to assure continuity of care. Practice organizations should establish standard operating procedures and workflows for telemedicine consults consistent with prevailing rules and norms.

INFORMED CONSENT. Before the initiation of a telemedicine encounter, the provider or designee shall secure patient con-

sent to be treated, as required by local or state regulations. This can be done in writing or verbally, and it should include an explanation of the benefits and risks of telemedicine encounters. The language shall be simple and understandable by the average patient.

This explanation shall include the following:

- The nature of the telemedicine encounter, including any technical limitations or potential for disruption and contingency plans.
- Procedures for coordination of care with other professionals, as indicated.
- Protection of patient identifiable information.
- Credentials of the distant site teledermatologists.
- Explicit emergency plan for patients in settings without access to clinical staff.
- Conditions under which telemedicine services may be terminated and a referral made to in-person care.
- Billing arrangements, if appropriate.

PHYSICAL ENVIRONMENT. The provider shall determine the level of distraction (e.g., noise), infringement on privacy, and other environmental conditions that may affect the quality of the encounter. In live-interactive encounters, the following conditions shall be observed:

- Both patient and provider room/environment shall ensure visual and auditory privacy.
- All persons in the examination room at both sites shall be identified before the consultation; and it shall be verified that all are visible and can be heard.
- Seating and lighting should be designed for both comfort and professional interaction. Background light from windows or other sources should be minimized.
- Cameras should be placed on a secure, stable platform to avoid unnecessary movement during the videoconferencing session and should be placed at the same elevation as the eyes with the face clearly visible to the other person.

Telemedicine management of the patient. Providers shall determine the appropriateness of telemedicine on a case-by-case basis, and whether the patient must be seen in person and for what purpose. This information shall be documented in the patient's record consistent with relevant standards in evaluating the patient.

PATIENT EVALUATION AND EXAMINATION. The provider shall obtain the data necessary for making a diagnosis, differential diagnosis, work-up if appropriate, and treatment plan, including the following:

- Identifying information (e.g., age, gender, race)
- Chief complaint(s)
- History of present illness (including location, description, size, quality, severity, duration, timing, and context modifying factors such as prior treatments and responses to treatments)
- Associated signs and symptoms
- Medical history, if pertinent
- Family history, if pertinent
- Medications
- Allergies, including nature, severity of reaction, and treatment
- Adequate diagnostic quality images, as available
- Diagnostic data (e.g., obtained via self-report or access to databases) and laboratory test results

Special Considerations: The referring and consulting providers shall decide whether to exclude certain types of cases that require special consideration:

- *Full body examination:* A full body skin scan using videoconferencing (VTC) or store-and-forward (S&F) is feasible, but it may not show all skin lesions and surfaces with sufficient detail. Enhanced lighting, multiple imaging, and several angles may be helpful.
- *Hair-bearing skin:* The scalp and other areas with a significant amount of hair may need to have hair physically displaced or removed, and special lighting may enhance viewing conditions.
- *Pigmented lesions:* Pigmented lesions may present a diagnostic challenge and should require a higher index of suspicion when interpreting. Peripheral devices such as dermatoscopes and confocal microscopy may be incorporated into teledermatology consultations.^{1,27,50,74}
- *Mucosal lesions:* Mucosal lesions and orifices, including genitalia, often require special attention to lighting and exposure to allow examination.
- *Skin color:* Lighting and background conditions may change the color of skin lesion captured in images.

FOLLOW-UP AND CARE COORDINATION. Continuity of care is a critical element in quality of medical care and patient well-being. Hence, teledermatologists should make every attempt to identify the patient's usual provider and local medical resources to coordinate care and make referrals as indicated.

The teledermatologist shall communicate results of the encounter to the patient's referring provider and/or to the patient, using secure electronic methods in addition to verbal communication in live-interactive encounters.

A follow-up plan after the encounter shall be developed and communicated with the patient and/or the referring provider. This includes any required follow-up, referrals, as well as clinical signs that signify a significant exacerbation. Laboratory and other diagnostics ordered shall be followed up in a timely manner with the patient and their providers, as indicated and necessary.

DOCUMENTATION. Each patient encounter shall be documented and maintained in a secure, HIPAA (Health Insurance Portability and Accountability Act) compliant form and location. Documentation shall include at a minimum the diagnosis and/or differential diagnosis and recommended management/treatment plan and shall include a summary of the findings. Documentation shall adhere to all medical-legal standards of care, and, if appropriate, insurance requirements for future review and audit. Providers shall maintain up to date business associate agreements with technology suppliers and other vendors who have access to patient's personal health information.

Language used to document the encounter may include "*Based on the images and history provided, my impression is as follows.*"

Recording of live-interactive encounters is optional, unless it is required in particular settings. Patient consent is necessary when the recording is made for quality assurance, training, or research purposes. A written record of the consult shall be kept at least at one site (referring provider or consultant).

In S&F encounters, electronic, faxed, mailed, or e-mailed notes shall become part of the patient's medical record, including any teledermatologist annotations.

The referring provider and teledermatologist should establish an explicit process for patients to request copies of their telemedicine encounters.

Quality. Providers shall use a continuous quality improvement program, including a clinical oversight process. The quality improvement program includes

- Technical or administrative failures
- Appropriateness of virtual encounter
- Patient and/or provider satisfaction
- Patient outcomes
- Pathology or imaging results
- Recommendations for follow-up

Ethical considerations. Telemedicine practice shall conform to the same professional ethics that govern in-person care. Telemedicine providers shall incorporate ethical statements

and policies and legal/regulatory requirements into their standard operating procedures, including the following:

- An explicit code of ethics.
- Compliance with federal, state, and jurisdictional laws and regulations, and institutional policies.
- Nondiscrimination clause regarding denial of service to individuals on the basis of location, socioeconomic status, disease or disability, gender, gender preference or sexual orientation, ethnicity, national origin, or religious affiliation.
- Provision of service should not be conditional upon receipt of payment by the patient.

Direct-to-patient care. Based on the limited data available from the emerging practice of direct-to-patient teledermatology and some potential concerns regarding quality, third-party benefits, follow-up, and disclosures, anyone practicing direct-to-patient teledermatology shall develop and implement an explicit quality assurance plan and proper disclosures. The disclosure can be posted on a Web site, software application, or other information source, and should include basic information on professional qualifications, credentialing, and privileging; the nature of the service provided (such as consultations, referrals, and follow-up); participation in networks or health systems; and patient-relevant information such as quality assurance mechanisms in place and patient access to their records.

TECHNICAL GUIDELINES

Communication modes and applications. All efforts shall be taken to use appropriate ICT modalities with authentication, verification, confidentiality, and security arrangements and with full compliance with HIPAA laws. Software platforms should not be used when they incorporate social media.

Devices and equipment. Devices shall have up-to-date anti-virus software and a system-wide firewall with security patches and updates on the operating system and third-party applications.

Providers/organizations shall use device management software to provide consistent oversight of applications, devices, and data configurations and security.

Organizations and providers shall ensure that equipment and connectivity are functioning properly with regular testing and maintenance.

Image quality. Image quality is essential for providing teledermatology service. This applies to both synchronous and asynchronous encounters. The following technical specifications shall be observed:

REQUIREMENTS FOR REAL-TIME VIDEOCONFERENCING (SYNCHRONOUS ENCOUNTERS). The technology shall meet the following specifications:

- H.264 video compression standard or higher⁸⁰
- H.323 compliant⁸¹
- H.261 video compression standard compatibility⁸²
- G.711 audio compression standard or higher⁸³
- Live video resolution 4CIF (704×480) or higher
- Content resolution XGA (1024×768) or higher
- Capability of connecting at 384 kbps running 4CIF@30fps
- Minimum of 384 kbps connection speed between referral and consultant sites.
- Different technologies may render different video quality at the same bandwidth; hence, each endpoint shall use bandwidth sufficient to achieve clinical quality.
- Where practical, providers may recommend preferred videoconferencing software and/or video and audio hardware to the patient, as well as providing any relevant software and/or hardware configuration considerations.
- The providers and patients may use link bandwidth test tools to determine connectivity before starting the session to ensure sufficient quality of service.
- Wired links provide the most reliable connectivity on the Internet, and they should be used when available.
- The videoconference software should adapt to changing bandwidth availability without losing the connection. If feasible, redundant systems should be in place.

Lighting. Background lighting should be minimized, and additional indoor lighting using fluorescent daylight or full-spectrum bulbs may be needed to augment the illumination device on the examination cameras.

Views. The imager should hold the camera at a distance to show the general distribution of the skin lesion(s) before obtaining close-up images (usually about 24" for most body areas). When moving the camera to show the distribution and other details, the imager should request feedback regarding the speed of camera movement from the dermatologist to ensure adequate image quality. Oblique views may be included to show skin surface changes.

Positioning. If the camera does not contain an image viewer, it is important to position the patient (as feasible) in between the camera and the videoconference monitor in one line of sight.

Verbalization of body regions being examined. The imager shall identify the part of the body being imaged, noting important characteristics such as size, color, and appearance of skin.

Focus. Camera angle must be perpendicular to the skin for close-up images, noting the distance to the skin lesion(s), and the camera must be held as still as possible.

Freeze-frame capture. Most video cameras are equipped with a freeze-frame feature, which is useful for diagnosis, especially when bandwidth (connectivity speed) is low. Freeze-frames allow the dermatologist to appreciate fine features of skin lesions and minimize image degradation that occurs when scanning with the camera.

Color. Viewing devices may be color calibrated. A Macbeth color chart may be useful.

Other. Avoid distracting jewelry and clothing.

Use measurement tools to show size and distribution, as appropriate.

REQUIREMENTS FOR ASYNCHRONOUS IMAGING

Digital cameras. Digital cameras shall be used for image acquisition, with a minimal resolution of 1024×768 pixels (0.8 megapixel), preferably 3264×2448 pixels (8 megapixel) or greater.

Macro mode. Macro mode capability is ideal (close-up mode or “flower” image).

Background. Use a solid, neutral color with a nonreflective surface.

Lighting. Diffuse, indirect light is optimal, using fluorescent daylight or full-spectrum bulbs (avoid incandescent). If outdoors, use well-lit areas or evenly shaded areas if sunny.

Flash. Use flash to help eliminate shadows, but it may cause white out if too close.

Compression. Use JPEG medium or low setting (no more than 20:1).

Focus. Adjust camera and patient to have camera angle perpendicular to the skin lesions being imaged. Use autofocus with area of interest in center of frame. If not possible, focus first on the area of interest, depress shutter button half-way to focus, and then move the camera to center the image before fully depressing shutter button.

Color. Viewing devices may be color calibrated. Macbeth color chart may be useful.

White balance. The imaging device shall be calibrated for white balance by taking a picture of white or gray card. The image can be used to set the white balance by accessing custom white balance (typically available under camera settings). The white balance calibration should be recalibrated if

there is a change in the physical location of the imaging device or lighting in the room.

Views. A chaperone or legal guardian should be used as required or appropriate.

If more than one area is involved, all regions involved should be included. Take images to show location and arrangement of lesion(s). Take several views.

- Far—entire body or obvious region.
- Medium—include an anatomical landmark such as the navel or hand.
- Close-up—if the camera has a macro capacity (the “flower” image), an image can be taken within 18 inches from the skin; otherwise, use the optical zoom, if available for a close-up. Use perpendicular and oblique views for close-up.

Complementary views should be included. For example, if the hands are involved, take photos of the feet, knees, and elbows (additional examples located in the ATA Quick Guide to S&F Tele dermatology for Referring Providers) (Appendix).³

Peripheral devices such as dermatoscopes and confocal microscopy may be incorporated into tele dermatology consultations. Images should be obtained using a hybrid or polarized dermatoscope.

Dermoscopy images may be taken with a dermatoscope <2 inches from the skin (noncontact mode) and touching the skin after cleaning the instrument and skin with alcohol pads (contact mode) to improve luminance.

Distracting jewelry and clothing should be removed before imaging.

Lesions should be identified. Identification markers should be placed adjacent to the lesion without covering any portion of it. *On the skin:* Lesions can be identified using adhesive labels, surgical tape, washable markers, or other removable tools. Before sending the image, the user should add a digital circle, box, or arrow to the image.

A ruler should be included in each image (general and close-up) in close proximity to the lesion so that size/extent can be determined from the image.

Images shall not be altered in any way after taken.

Images, transmitted text, and tele dermatologist response shall become part of a secure, retrievable medical record.

Images should be reviewed during the acquisition process to ensure acceptable quality. Send only helpful and clear images to the consultant.

MOBILE DEVICE USE

Device camera. All image acquisition details described above for digital cameras apply to mobile device cameras.

Applications/software. Applications (apps) shall allow for images and medical information to be uploaded in a secure, HIPAA-compliant, and encrypted protocol, such as the Advanced Encryption Standard (AES), accessible only by secure registration and password; may include a protocol for reimbursement, and downloadable to an electronic patient record.

Image display. Monitors for viewing images shall have a minimum of 1024×768 pixel resolution, minimum contrast ratio of 500:1, minimum luminance of 250 cd/m², and minimum dot pitch of 0.19. A dedicated monitor or set of monitors may be used. Color calibration may be used to ensure the reliable color rendition.

Privacy. All patient identifiable information (protected health information) shall be treated as confidential and protected from unauthorized use and shall meet recognized standards.

Individuals in charge of technology shall familiarize themselves with the technologies available regarding computer and mobile device security.

When using a mobile device, special attention shall be placed on the privacy of information being communicated or stored.

Devices shall be configured to utilize an inactivity timeout function that requires a password or re-authentication to regain access. This timeout should not exceed 15–20 min. Mobile devices with patient information should be kept in the possession of the provider when traveling or in an uncontrolled environment.

Providers should have the capability to remotely disable or delete stored information on their mobile device if lost or stolen.

Patients should be informed that some software and mobile apps designed for patient use separately and permanently store or create copies of images on equipment or device, creating a possible security/privacy risk.

Access to videoconferencing sessions shall be limited to authorized users.

Whole disk encryption (FIPS 140-2, known as the Federal Information Processing Standard) shall be used when storing protected health information on the hard drive of the providers' computers.

Patients should be informed regarding the best ways to protect their devices and data, especially when using software, Web-based or mobile apps on their own.

Providers and patients shall discuss any intention to record encounters or images, the purpose or use of the recording, how the information will be stored, and how privacy will

be protected. Recordings shall be encrypted for maximum security. Access to the recordings shall be limited strictly to authorized users.

ADMINISTRATION GUIDELINES

Security. Teledermatologists shall keep a record of all users of electronic records to assure that only those with legitimate clinical need can have such access as stipulated by law. Use of such records for administrative, research, or teaching shall be defined and approved by appropriate bodies, such as institutional review boards.

System administrators shall

- Keep database files in encrypted form at rest and in transit.
- Have the vendor pass a security audit and sign a Business Associate Agreement if data storage is cloud-based.

Licensing and credentialing. Providers shall follow federal, state, and local regulatory and licensure requirements related to their scope of practice, and shall abide by state board and specialty training requirements. A provider shall ensure that he/she is duly licensed and credentialed in a jurisdiction in which the patient is physically located. Providers shall practice within the scope of their licensure and shall observe all applicable state and federal legal and regulatory requirement regulations related to the use of telemedicine.

The practice of medicine shall be defined as occurring where the patient is located at the time of the physician–patient encounter. As such, the provider shall be under the jurisdiction of the state medical board where the patient is located.

Providers who wish to be licensed in multiple states or “interstate medical licensure” shall be aware of regulations and options. For example, the Federation of State Medical Boards (FSMB) has drafted the “Interstate Medical Licensure Compact” to provide an expedited licensure process for eligible physicians. The Compact is expected to ease the process of gaining licensure in multiple states.

According to the Compact, eligible physician designates the *state of principal licensure* and selects the other member states where a medical license is desired. The state of principal licensure would verify the physician's eligibility and provide credential information to the Interstate Commission, which collects any applicable fees and transmits the physician's information and licensure fees to the additional states. Subsequently, the physician would be granted a license. The Compact does not change the state's existing definition of a physician within its Medical Practice Act nor the requirements for state medical licensure. The enactment of the

Compact in additional states is a dynamic process, and the practitioners should refer to www.licenseportability.org for the latest updates.

Liability. Teledermatologists shall be cognizant of the liability that is incurred in medical practice, whether in-person or via electronic means.

Providers should verify that their medical liability insurance policy covers telemedicine services, including services provided across state lines, if applicable.

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Appendix Definitions³

Teledermatology refers to the delivery of dermatology specialty services (advice, diagnosis, treatment planning, and education) to patients and other healthcare providers remotely using ICT.

Synchronous teledermatology refers to the remote provision of services online or with both provider and patient communicating at the same time.

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Asynchronous (or S&F) teledermatology refers to the remote provision of service at different times.

Hybrid teledermatology refers to utilizing both S&F and videoconferencing modes for teledermatology.

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