

REVIEW ARTICLE

Practice guidelines for teledermatology in Australia

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ABSTRACT

Despite the potential of teledermatology to increase access to dermatology services and improve patient care, it is not widely practised in Australia. In an effort to increase uptake of teledermatology by Australian dermatologists and support best practice, guidelines for teledermatology for the Australian context have been developed by The University of Queensland's Centre for Online Health in collaboration with The Australasian College of Dermatologists' E-Health Committee. The guidelines are presented in two sections: 1. Guidelines and 2. Notes to support their application in practice, when feasible and appropriate. Content was last updated March 2020 and includes modalities of teledermatology; patient selection and consent; imaging; quality and safety; privacy and security; communication; and documentation and retention of clinical images. The guidelines educate dermatologists about the benefits and limitations of telehealth while articulating how to enhance patient care and reduce risk when practicing teledermatology.

Key words: dermatology, dermoscopy, telemedicine, telehealth, standards, teledermatology, practice guidelines.

GUIDELINES

Teledermatology

Introduction

These guidelines aim to inform dermatologists practicing in Australia of best practice in teledermatology and provide guidance to standardise and support the appropriate, safe and effective use of teledermatology in the provision of patient care.

The Medical Board of Australia (MBA)'s 'Good Medical Practice: A Code of Conduct for Doctors in Australia' (Good Medical Practice) describes what is expected of all doctors registered to practice medicine in Australia. The application of Good Medical Practice will vary according to individual circumstances, but the principles should not be compromised. These principles are equally valid for technology-based models of medical practice as they are for traditional in-person models.¹

'Practice guidelines for teledermatology in Australia' complement the MBA's Good Medical Practice and 'Guidelines for Technology-based patient consultations'² and the Australian Medical Association's guidelines 'Clinical images and the use of personal mobile devices'⁵ to provide specific guidance on teledermatology. They are designed to take account of the changing models of care for delivery of dermatological services and work practices of dermatologists, in particular the use of smartphones to capture and transmit clinical information.

These guidelines have been developed by The University of Queensland's Centre for Online Health in collaboration with the Australasian College of Dermatologists' E-health Committee, and have been approved by the Australasian College of Dermatologists' Board of Directors. To support their development, a review of the literature and relevant national and international guidelines relating to teledermatology was undertaken to reflect current evidence supporting best practice, tailored for the Australian health-care setting.⁴

Structure of these guidelines

These guidelines are divided into two sections.

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- **Guidelines** for dermatologists practicing teledermatology.
- A series of **Notes** to support dermatologists in following the Guidelines. These include detailed information on the types of steps dermatologists, and referrers can take when feasible and practical to do so.

The Notes cover the following topics:

1. Appropriate technology, environment and practices to ensure quality, confidentiality and privacy
2. Patient selection
3. Informed consent
4. Requisite quality of information – Clinical image acquisition and review
5. Medical records – Storing clinical images securely

A glossary of terms and abbreviations used in the Guidelines is outlined in Table 1.

Scope

Audience

These guidelines are for use by specialist dermatologists practicing in Australia.

Teledermatology should only be practised by a dermatologist credentialed to practice traditional in-person dermatology. They should:

- Be registered with the Australian Health Practitioner Regulation Agency (AHPRA).
- Have specialist registration with AHPRA.
- Be registered with the Medical Board of Australia.
- Be a Fellow of the Australasian College of Dermatologists.

In satisfying the above criteria, specialist dermatologists should have sufficient knowledge, experience and understanding of teledermatology to appropriately select patients and visits suitable for teledermatology, and sufficient knowledge and understanding of the limitations of teledermatology when making a diagnosis or recommending treatment.

Accredited trainees with the Australasian College of Dermatologists may engage in teledermatology under the supervision of a dermatologist as defined above.

These guidelines may also be a useful resource for primary care practitioners and other medical specialists in understanding the technical, clinical and medico-legal considerations of best practice teledermatology.

Table 1 Glossary of terms and abbreviations

Term	Description
Cloud computing	A computing architecture where servers are remote to the client. The client (e.g. computer application, app, website) accesses the server typically via the Internet
Digital Imaging and Communications in Medicine (DICOM)	An international information technology (IT) standard used to transmit, store, retrieve, process, and display medical images and associated metadata. DICOM is both a file format as well as a protocol for the electronic exchange of medical imaging and associated metadata. All picture archiving and communication systems (PACS) use DICOM as the underlying IT protocol
Disaster recovery	Disaster recovery is both the duplicate storage of data and the plan to recover data after a disaster (e.g. flood, fire). The duplicate data storage is in a separate geographical location to the primary image repository
Picture Archiving and Communication System (PACS)	A PACS is a medical image repository used by most hospitals and health-care organisations. PACS is built on the DICOM standard. A PACS may be installed on the premise of the hospital or alternatively be cloud based. PACS are ubiquitously used to store radiology images
Redundant Array of Independent Disks (RAID)	RAID is an architecture which groups hard disk drives into sets or arrays of disks. Data are stored across multiple disks in the array. If one of the disks fails, the data stored on this disk can be recovered. However, if multiple disks in the array fail this may result in lost data
Referrer	The general practitioner (GP) or other clinicians who referred the patient for a specialist dermatology consultation. The referrer or their representative (e.g. clinical nurse practitioner, practice nurse) may accompany the patient during a real-time videoconsultation during which their role is to assist with the examination
RTVC	Real-Time Videoconsultation. For the purposes of these guidelines, RTVC involves a dermatologist consulting with a geographically separate patient using video conferencing
SAF	Store-and-Forward. The capture and storage of a digital image typically by the referrer/ managing clinician that is subsequently forwarded to the dermatologist for review. SAF uses asynchronous communication meaning the referrer and the dermatologist do not need to be present at the same time
Telehealth/Telemedicine	The delivery of clinical health services where the clinician delivering the service is distant from the consumer of the health service and uses information and communication technologies to bridge the separation of the clinician and the consumer. Synonymous terms for the purposes of these guidelines
Teledermatology	The practice of dermatology using information communication technology. A subset of telehealth
Vendor Neutral Archive (VNA)	A VNA is a medical imaging repository that provides centralised storage of all of an organisation's images regardless of the medical speciality that produced the images. A VNA may integrate with the organisation's electronic medical record to provide a patient-centric view of all imaging. VNA is built on the DICOM standard

Application

The guidelines cover the use of teledermatology for a consultation with a patient whether referred by another practitioner or self-referred, providing advice to a clinician managing a patient including informal advice, and for the purposes of triaging a patient or long-term follow-up of a patient. These guidelines apply to store-and-forward (SAF), real-time videoconsultation (RTVC) and hybrid modalities of teledermatology.

Teledermatology consultations may be provided outside of typical referral from other medical practitioners – for example:

- When the patient self-refers (often known as direct-to-consumer teledermatology).
- When the dermatologist provides long-term follow-up to their patients.

These models of care should adhere to the same clinical and technical standard of care as other teledermatology models of care.

CATEGORIES OF TELEDERMATOLOGY

Subject to appropriate assessment of the patient and other relevant circumstances, these guidelines may apply to one or more categories of teledermatology. The categories used in these guidelines are listed in Table 2.

Medico-legal risk mitigation

These guidelines support dermatologists practising teledermatology. The medico-legal risk mitigation strategies include:

- Confirming that their indemnity insurance covers telehealth.
- Using telehealth only for patients who meet appropriate criteria and have provided informed consent.
- Using open disclosure practices as outlined in the Australian Open Disclosure Framework⁵.
- Keeping accurate and contemporaneous records.
- Adhering to all relevant practice guidelines.

Table 2 Categories of teledermatology

Category	Description
Consultation with a referred patient	<ul style="list-style-type: none"> • Used as a substitute or an adjunct to an in-person consultation. • May use any telehealth modalities. • Patient consents to the use of telehealth. • Patient would attend the consultation if done by RTVC or hybrid methods. • Dermatologist must have received a valid referral to be eligible for Medicare rebates (see Australian Medical Association summary of valid referrals¹¹ for specialist care).
Consultation for a non-referred patient	<ul style="list-style-type: none"> • Used to provide advice to a clinician managing a patient without the managing clinician referring the patient. • May use any telehealth modality. • Communication is typically between the managing clinician and dermatologist and the patient may not attend the consultation. • Clinician managing the patient would ordinarily be responsible for follow-up care. • May be an informal request for advice.
Direct-to-patient	<ul style="list-style-type: none"> • Used to provide dermatology services directly to the patient. • May use any modality of telehealth. However, store-and-forward of patient-acquired images is the most common model of care.
Triage of a referred patient	<ul style="list-style-type: none"> • Used to assess the need and urgency of dermatological care. • A referral for dermatological care from a referring clinician is reviewed by a dermatologist prior to seeing the patient. • The dermatologist then makes and communicates a management plan which may include the following options: schedule for in-person consultation with appropriate urgency, direct booking for procedure or surgery, management of the patient by the referrer without a need for further dermatologist advice, management of the patient by the referrer and subsequent review by the dermatologist, or discharge without need for follow-up. • When the dermatologist recommends the referrer manage the patient, a treatment plan should be included in the response. • Triage teledermatology typically uses store-and-forward.
Triage of a non-referred patient	<ul style="list-style-type: none"> • Used to provide triage advice to a clinician managing a patient without the managing clinician referring the patient. • Communication is typically between managing clinician and dermatologist. • The clinician managing the patient is responsible for follow-up care. • Often informal requests for advice.

- Taking into account the limitations of telehealth, such as not being able to perform a physical examination or limitations in the technology, when making the diagnosis or recommending treatment.
- Choosing good quality telehealth technology and optimising this technology.
- Taking reasonable steps to ensure patient privacy.

Note. Adapted from 'Medico-legal aspects of telehealth services for Victorian Public Health Services', by the Department of Health and Human Services. 2015. State Government of Victoria, Australia. p10-17.⁶

Emergency situations

In an emergency, it may not be possible to practise according to these guidelines. If an alternative is not available, a teledermatology consultation or investigation should be as thorough as possible and lead to more suitable arrangements for the care and follow-up of the patient.

GUIDELINES

Dermatologists practicing teledermatology should:

Provider competency

1. Ensure they have sufficient knowledge and understanding of teledermatology to allow them to appropriately select patients and visits suitable for teledermatology, and sufficient knowledge and understanding of the limitations of teledermatology when making a diagnosis or recommending treatment.
2. Ensure they have sufficient expertise in image interpretation especially if using advanced imaging techniques including dermoscopy, reflectance confocal microscopy, optical coherence tomography and total body photography.

Appropriate technology, environment and practices to ensure quality, confidentiality and privacy

3. Be compliant with all relevant State and Territory and Commonwealth legislation – for example, the *Privacy Act 1988* – including taking reasonable steps to help protect the privacy of their patients and the privacy of their patient's health records and reporting of privacy breaches if it is likely to result in serious harm.
4. Select, and optimise use of, appropriate and reliable technology, platforms, equipment, data services and physical environment to fulfil their obligations to deliver teledermatology services safely and effectively, while protecting patient privacy and confidentiality.
5. When capturing images using a mobile device, manage these in accordance with the guidelines prescribed by the Australian Medical Association entitled 'Clinical images and the use of personal mobile devices'.⁵

6. When conducting RTVC, determine if the technical and socio-technical factors of the videoconference interaction are of sufficient quality to undertake a teledermatology consultation.

See Note 1 for further information.

Patient selection

7. Use their professional judgement to determine on a case-by-case basis whether teledermatology is an appropriate modality. The need for a direct physical examination should be considered when determining if teledermatology is appropriate. If suitable for teledermatology, determine whether a blended approach to delivering care is appropriate where a proportion of visits are provided in-person and a proportion are provided by teledermatology.
8. Use teledermatology as means of delivering dermatology care for a patient who consents to the use of telehealth as an alternative or adjunct to in-person care (or for whom consent is given in accordance with the *Guardianship and Administration Act 1985*).
9. Where a referral is for an individual lesion and the dermatologist believes a full skin examination is required, initially manage the individual lesion and make recommendation for a full skin examination where feasible.

Note. Adapted from 'Quality Standards for Teledermatology', by Primary Care Commissioning with input from the Department of Health. UK. 2013. p14.⁷

See Note 2 for further information.

Informed consent

10. When offering directly to the patient the choice of teledermatology, obtain the patient's informed consent. When the use of teledermatology is recommended by the clinician managing/referring a patient, it is the responsibility of that clinician to obtain the patient's informed consent to the use of teledermatology, including the provision of the patient's health information to the dermatologist. Informed consent should include an explanation of teledermatology and its risks and limitations.
11. Where the consultation is directly with the patient using RTVC, adhere to the guidelines for technology-based consultations published by the Medical Board of Australia including making their identity known to the patient, confirming the identity of the patient at each consultation, ensuring all persons attending an RTVC are on screen and identified, and explaining the process.² It should not be routine practice to record and store the RTVC. If the RTVC is going to be recorded, obtain patient consent.
12. Informed consent in health-care means the patient will be given understandable and clear information about their choices so they can make the right decisions about their health and health-care.
13. Consent is their agreement for a health-care professional to provide them with treatment and care,

including any tests, medicines, treatments or procedures they agree to.

14. Before they give their consent, make sure:
 - The patient is aware of options available.
 - That any risks, and the likelihood of those risks, are explained.
 - They understand the purpose of the action they are consenting to.
15. Informed consent is different for different people. To provide informed consent you may need:
 - An interpreter if English is not their first language and you find it hard to communicate.
 - A patient's friend, family member or support person to discuss options.

See Note 3 for further information.

Requisite quality of clinical information

- 16 Evaluate whether the quality and completeness of the clinical information and images provided by the referring/managing clinician are sufficient for the modality of tele dermatology. If insufficient, additional information should be requested from the referrer, or the patient should be referred for an in-person consultation.
- 17 Only use store-and-forward tele dermatology for patients with pigmented lesions if a dermoscopic image taken by a person trained in the use of a dermatoscope is included with the referral.
- 18 Where the consultation is directly with the patient, adhere to guidelines for technology-based patient consultations published by the Medical Board of Australia⁵ to communicate with the patient to collect relevant medical and medicines history to make a diagnosis, ensure sufficient clinical justification for the proposed treatment and ensure the proposed treatment is not contra-indicated.

See Note 4 for further information.

Documentation and secure storage of medical records including images

- 19 Keep contemporaneous notes of the consultation and document the clinical consultation in the patient notes in usual manner with the addition of the following telehealth details:
 - That the service was performed by telehealth.
 - The modality of the telehealth (i.e. RTVC, SAF).
 - The date and time of consultation.
 - Responsibilities among the team for each element of the patient's management.

Both the dermatologist and patient-end clinicians should document the clinical consultation.

- 20 For RTVC:
 - Record the names of all attendees and sites that were linked.

- Record any technical difficulties that occurred that impacted on the clinician's ability to discharge their duty of care.

Note. Adapted from the 'Handbook for the Telehealth online education module', by the Australian College of Rural and Remote Medicine. 2015. Australian Government Department of Health and Ageing. p15–16.⁸

- 21 For tele dermatology consultations, clinical images form part of the medical record and accordingly should be stored to the patient's file, or a secure repository.
- 22 It is suggested that when documenting a tele dermatology consultation the wording recommended by the American Telemedicine Association be utilised,⁹ namely: 'Based on the images and history provided my impression is as follows'.
- 23 Ensure that all documentation related to tele dermatology including referral, consultation notes and images are retained for the period mandated for medical records by relevant state or territory legislation (typically seven years from date of last contact, or longer for paediatric patients). The retention period for clinical images is the same as for other health records.

See Note 5 for further information.

Communication with the referrer: follow-up and feedback

- 24 To support high quality referral images, consider publishing image acquisition guidelines in a format accessible to referrers – see *Note 4 for further information*.
- 25 Inform the referrer of the outcome of the tele dermatology referral. For a SAF consultation, the referring clinician is responsible for informing the patient of the outcome of the tele dermatology referral.
- 26 If a diagnosis of possible skin malignancy or other urgent diagnosis is made, ensure communication directly to the referring clinician is appropriately rapid, so that the patient can be informed and appropriate action taken.
- 27 Ensure all communication with the referrer regarding ongoing management within primary care includes:
 - An agreed process for implementing the management plan, including any responsibility for prescribing and follow-up.
 - Guidance as to when and in what circumstances further dermatologist advice may be needed.
 - Where appropriate and available, any educational materials that may support the referrer and patient.
 - Responsibilities among the team for each element of the patient's management.
- 28 When feasible, ensure the patient is informed of the agreed processes for implementing the management plan if this has not already been done during the RTVC.
- 29 For SAF consultations, respond to the referrer with the following information:

- A management plan and differential diagnosis.
 - If appropriate, arrangements for an in-person visit.
 - If appropriate, arrangements for the onward referral to another specialist.
- 50 If no diagnosis or management plan can be given after a SAF teledermatology referral, inform the referring clinician that they will need to consider alternative options to obtain dermatological advice.
- 51 Provide feedback to the referrer on the quality and completeness of referral information and imaging as part of continuous quality improvement. In scenarios where a diagnosis or management plan cannot be given, the dermatologist should provide feedback as to why the referral was unsuitable (e.g. poor-quality image, or patient unsuitable for teledermatology).

Note. Adapted from 'Quality Standards for Teledermatology', by Primary Care Commissioning with input from the Department of Health. UK. 2013. p32-34.⁷

NOTE 1

Teledermatology: Appropriate technology, environment and practices to ensure quality, confidentiality and privacy

The following notes are provided for dermatologists when selecting an appropriate device, application, messaging/mail service, display, data network and physical environment for teledermatology (Table 5).

When practicing teledermatology a dermatologist must comply with all relevant State and Territory and Commonwealth legislation – for example, the *Privacy Act 1988*. This includes taking reasonable steps to help protect the privacy of their patients and their health records and reporting of privacy breaches if it is likely to result in serious harm.

Selection of technology is important to ensuring the quality of the consultation and privacy of patients and their health records. Physical environment and etiquette are important to ensuring patient privacy and confidentiality.

Dermatologists should use good quality telehealth technology and optimise this technology. The technical information provided below aims to assist dermatologists and can be applied when relevant, feasible and practical to do so.

NOTE 2

Teledermatology: Patient selection

This Guidance Note provides information on the types of factors that dermatologists should consider when making case-by-case decisions on the suitability of teledermatology for the patient and for individual visits within an episode of care.

The decision to provide telehealth should be informed by the following criteria:

- The dermatologist's ability to make a definitive diagnosis.
- The provider's comfort and expertise with teledermatology.

- Whether the referrer will accompany the patient during an RTVC, and whether the referrer can adequately undertake a physical examination.
- Whether there is a need to perform a full skin examination.
- Clinical factors such as the presenting condition, complexity of consultation, type of consultation (e.g. new *versus* review) and location of skin condition (e.g. hair bearing skin, mucosa).
- Whether the health-care organisation where the dermatologist is employed has a set of criteria about which patients are suitable for telehealth.
- Coordination factors such as continuity of care, shared care and existing doctor-patient relationship.
- Practical factors such as the availability of specialists, local clinical staff and technology.
- Patient factors such as the ability of the patient to travel, willingness of the patient to travel and the patient's family, work and cultural situation.

Note. Adapted from the 'Handbook for the Telehealth online education module', by the Australian College of Rural and Remote Medicine. 2013. Australian Government Department of Health and Ageing. p15-16.⁸

Note. Adapted from 'Quality Standards for Teledermatology', by Primary Care Commissioning with input from the Department of Health. UK. 2013. p14.⁷

Note. These factors are not of equal value or importance. That will depend on the circumstances of the individual's case.

NOTE 3

Teledermatology: Informed consent

This Guidance Note provides further information for both dermatologists and referrers/managing clinicians on:

- The types of circumstances in which a dermatologist should obtain patient informed consent and when it is a referrer or managing clinician's responsibility to do so.
- What to do in circumstances where the patient is unable to provide informed consent or is a minor.
- Ways to support referrers to obtain appropriate informed consent.

It may be helpful to use a pro forma/template to enhance the completeness of the referral and clinical information and to show how the patient consent was given.

Who is responsible for obtaining informed consent?

There are a number of entry points to teledermatology and these determine who is responsible for obtaining the patient's informed consent (see Table 4).

Obtaining informed consent – What to include

Informed consent may be written or verbal. The consent information provided to a teledermatology patient should include:

Table 3 Technical information for dermatologists planning to use teledermatology

Secure transmission	<ul style="list-style-type: none"> • Encrypt all data (e.g. images, referral and response) transmitted over a data network. Be aware this precludes using unencrypted email that is transmitted across public networks for teledermatology. • Avoid using smartphone text messages, multi-media messaging and consumer messaging services. Instead use purpose-built secure teledermatology, medical photography or electronic medical record applications.
Smartphone devices	<ul style="list-style-type: none"> • Ensure device is password protected and secure from unauthorised access. • Ensure images do not auto-upload to any social media networks or backup sites. • Delete the image from any personal device once it is saved to the patient record. <p>Note. Adapted from 'Clinical images and the use of personal mobile devices: A guide for medical students and doctors' by the Australian Medical Association and Medical Indemnity Industry Association of Australia 2014.⁵</p>
Videoconferencing platform	<p>When the dermatologist has carriage over the choice of videoconference platform, select a platform that:</p> <ul style="list-style-type: none"> • Is standards-based (H.323, Session Initiated Protocol [SIP] or Web Real-Time Communication [WebRTC]) or if proprietary, provide a mechanism to allow audio and video sessions between the proprietary and standards-compliant endpoints. • Employs standards-based audio and video compression. • Automatically adapts video and audio settings to changing bandwidth availability without losing the connection. • Allows encryption of authentication, video and audio traffic using encryption protocols that are non-proprietary, standards-based in order to foster interoperability, inspectability and trust. • Supports a minimum frame rate of 25 frames per second (to avoid poor video quality). • Supports a minimum of 16 kilobits per second audio channel (to avoid poor audio intelligibility). • Supports content sharing (additional video channel for sharing screen).
Videoconferencing display (screen)	<ul style="list-style-type: none"> • Dermatologist's display (screen) should support a minimum resolution of 1280 × 720 pixels. • Size of the display should be appropriate for the viewing distance (rule of thumb that may be employed is that minimum display size = viewing distance/2.5).
Data network for videoconferencing	<p>When the dermatologist has carriage over the choice of data network, they should choose a broadband network which allows sufficient connection speed to ensure image quality is maintained and disruptions are minimal.</p> <ul style="list-style-type: none"> • To avoid poor performance, round-trip latency should be lower than 300ms.¹² • To avoid poor performance, packet loss should be less than 0.1%.¹² • To avoid connection issues, the dermatologist may install a network connection dedicated to videoconferencing.
Physical environment	<ul style="list-style-type: none"> • Take measures to ensure visual privacy. • Take measures to ensure that the content of the consultation is not overheard from outside of the room. This may include using headphones or acoustic insulation (including acoustic panels, acoustic tiles, carpet and curtains).
Etiquette for online communication	<ul style="list-style-type: none"> • Test the video and audio prior to connecting to the videoconsultation. • Use a headset if typing (e.g. consultation notes) during the consultation to eliminate keyboard noise being transmitted. If not using a headset, place the microphone/speaker close. • If there is more than one participant at either end-point, they should be seated adjacent to each other and seated approximately two metres from the camera. • Frame all participants in camera view so their head and shoulders occupy the majority of the frame (newsreader view) and their faces are clearly visible. • At the beginning of the videoconsultation, dermatologists should: <ul style="list-style-type: none"> • Introduce themselves and state their credentials. • Verify all participants at each end can be seen and heard. • Give instructions to patient-end on what will occur if there is a disruption in the videoconference connection (contingency plan). • Document all persons in attendance during the videoconsultation in the patient notes. • It should not be routine practice to record and store RTVC. If the teledermatology consultation is going to be recorded, then patient consent should be taken.

- What the teledermatology process involves (this will vary between services) and why it may be helpful for their care.
- Medical opinion can only be based on the images and information provided.
- That there may be a difference in diagnostic accuracy between teledermatology and an in-person consultation.
- The issues referred to above about risks and limitations of teledermatology.

Table 4 Determining responsibility for obtaining a patient's informed consent

Scenario	Responsibility for obtaining consent
A patient may be referred specifically for teledermatology	Referrer obtains consent to share information and for teledermatology Dermatologist does not need to obtain further informed consent to participate in telehealth consultation
A dermatologist may offer to substitute a proportion of in-person visits with teledermatology visits during an episode of care	Dermatologist
A dermatologist may receive a referral, and offer the patient the choice of teledermatology	Dermatologist
Consultation between a dermatologist and a managing clinician to provide advice on a non-referred patient	Managing clinician (to share health information)
Triage of a referred/non-referred patient, typically using store-and-forward	Referrer/Managing clinician (to share health information)

- They may still need to have an in-person consultation.
- They may bring a family member or companion or, if appropriate, a chaperone to the teledermatology session.

Note. Adapted from 'Quality Standards for Teledermatology', by Primary Care Commissioning with input from the Department of Health. UK. 2013. p18-20.⁷

Circumstances where the patient is unable to provide consent or is a minor

If an adult is temporarily unable to consent and treatment is required, permission (consent) to refer and/or manage the patient via teledermatology should be obtained from the person highest on the list of the order of persons from which consent can be obtained relevant to Commonwealth, State or Territory legislation. In the case of an emergency where the patient is not competent to consent, teledermatology services can lawfully be provided without consent, although treatment cannot be administered if the patient had prior to becoming incompetent expressed a wish not to receive the treatment contemplated (in some States or Territories).

Even if a patient is a minor, if the minor is mature enough to understand the nature and effect of the service proposed, consent could be obtained from the minor. Generally speaking, most adolescents aged 16 and over are capable of providing informed consent. Those aged 13 and under are generally not. It depends whether they can understand the issues involved. If in doubt, obtain legal advice.

Note. Adapted from 'Medico-legal aspects of telehealth services for Victorian Public Health Services', by the Department of Health and Human Services. 2015. State Government of Victoria, Australia. p28-30.⁶

NOTE 4

Teledermatology: Requisite quality of information – Clinical image acquisition and review

The quality of images is critical to being able to deliver teledermatology services. This Guidance Note aims to assist both dermatologists and referrers by providing further information on:

- Collection, use, and disclosure of clinical images
- Camera settings
- Technique
- Dermoscopic image acquisition
- Image review

This Note should be followed when relevant, feasible and practical to do so.

To support high quality referral images, dermatologists could consider making available image acquisition guidelines in a format accessible to referrers.

Collection, use and disclosure of clinical images

Images acquired on a mobile device should be acquired and managed in accordance with the guidelines prescribed by the Australian Medical Association entitled 'Clinical images and the use of personal mobile devices'.⁵ These provide important information on the decision making process for collecting, using and storing clinical images for the purposes of clinical care to ensure privacy and confidentiality obligations are met.

Camera settings

To optimise image quality, it is recommended that images acquired for teledermatology have the following camera settings:

- Minimum resolution of 2000 × 1500 pixels or 3 megapixels.
- White balance should be set to automatic.
- Flash set to always on.
- Cameras set to capture maximum quality JPEG files.
- Consistent camera settings should be used from one visit to the next to aid comparability of imaging.

Technique

It is recommended that the following technique be employed when imaging for teledermatology assessment:

- Patients must consent to imaging.
- To avoid risk of misidentification, each individual patient session should begin and end with a photograph to identify the patient. Take one photograph of something to identify the images as belonging to an individual patient, for example unique identification number. Repeat at the end of the individual patient session.
- If possible remove jewellery and clothing.

Table 5 Considerations for storing images securely

Archive securely	<ul style="list-style-type: none"> • Store laptop or portable storage device in a locked physical location. • Alternatively, employ full disk encryption when the laptop or portable is not physically secured.
Do not modify original images	<ul style="list-style-type: none"> • Images should not be modified. • Take care not to (re)apply the Joint Photographic Experts Group (JPEG) compression to images as can happen when saving images to storage media. • Save any images manipulated in any software program as a copy. Do not save them over the original file.
Mitigate data loss	<p>To mitigate data loss:</p> <ul style="list-style-type: none"> • Archive images on a hardware device that has fault tolerance – for example, redundant array of independent disks (RAID). Alternatively, images should be backed up and the backup copy stored in a separate geographical location to the original image. • Store images in architecture that employs disaster recovery procedures.
Control access	<ul style="list-style-type: none"> • Control access to images so that access is limited only to those persons directly involved in the patient's care or responsible for managing the image archive. • Limit access to read-only to prevent accidental image loss. • Keep an audit trail of persons viewing images.
Encode images	<ul style="list-style-type: none"> • Store images in Digital Imaging and Communications in Medicine (DICOM) format as this: <ul style="list-style-type: none"> • Permits portability of both the image and metadata. • Ensures there is no separation of the images and the metadata. • If DICOM is not used, use a standards-based consumer image file format such as Joint Photographic Experts Group (JPEG), Portable Network Graphic (PNG), Tagged Image File Format (TIFF) or RAW.
Store in an image repository	<p>Store images in an image repository such as:</p> <ul style="list-style-type: none"> • A health-care organisation's Picture Archiving and Communication System (PACS) or Vendor Neutral Archive (VNA). • A non-DICOM image repository. • An electronic medical record. • A managed network drive, storage server or a cloud storage provider (See Cloud computing storage below). When using these storage devices, images should be stored using a file structure that at root level identifies the patient and subdirectories based on date to identify the imaging study. The image file name shall include a patient identifier to help prevent misidentification. <p>Only store images in a repository where there exists functionality to export the images and associated metadata in a standards-based format to facilitate portability and avoid vendor lock in.</p> <p>Do not archive images on a local hard drive of computers, removable storage devices (e.g. portable hard disk drives, thumb drives) or a non-validated cloud provider (See Cloud computing storage below).</p> <p>Do not archive images on an imaging modality before verifying that the modality meets the requirements for images to be archived securely and for the period of time mandated by relevant legislation.</p>
Cloud computing storage	<p>A dermatologist may outsource the storage of images to a cloud service provider. Imaging repositories (e.g. PACSs, VNAs), electronic medical records, network drives and storage servers may use cloud computing storage.</p> <p>If using a cloud storage provider, apply the recommendations of the Australian Cyber Security Centre¹³, namely:</p> <ul style="list-style-type: none"> • Use a locally owned vendor or a foreign owned vendor that is located in Australia and stores data only within Australia. • Perform a risk assessment before using a cloud service provider for the storage of images. • Use the risk assessment¹⁴ prescribed by the Australian Signals Directorate. • Consider the sensitivity of the images that will be stored and the choice of cloud provider should reflect these sensitivities. Highly sensitive images such as nude photographs should be stored on cloud services listed on the Australian Signals Directorate Certified Cloud Services List (CCSL).
	<ul style="list-style-type: none"> • Acquire images with the camera perpendicular to skin surface. • Acquire images in cephalic orientation, that is with patient's head towards the superior of the frame. • Acquire one or more overview image/s of relevant areas of the body (e.g. back, legs, arms) to demonstrate the distribution of skin lesions or pathology. • Acquire one or more mid-close-up image/s to include some anatomical marker (e.g. joint, navel) establishing the location, laterality and providing some general context for the lesion or pathology. Lesions should be identified. Identification markers should be placed adjacent to the lesion without covering any portion of it. Lesions can be identified using adhesive labels, surgical tape or washable markers.

- Acquire at least two macro (close-up) images of the lesion or pathology using either macro mode or optical zoom. The camera should be approximately 20 cm from the skin surface. Acquire using electronic flash and acquire two images at two different angles to help ensure specular reflection does not obscure any of the skin surface.
- If possible, use a solid, neutral colour with a non-reflective surface (e.g. a towel) as a background to the image.
- For skin lesions, acquire a further macro image with a centimetre scale.
- For skin lesions, the lesion should be in centre of the frame with equal areas of surrounding skin on the periphery.
- Referrers should review images to ensure they are focussed, of sufficient quality and clinically relevant.

Note. Adapted from: ‘Quality Standards for Teledermatology’, by Primary Care Commissioning with input from the Department of Health. UK. 2015. p18–20⁷; and ‘Practice Guidelines for Teledermatology’, by K McKoy, NM Antoniotti, A Armstrong, et al. 2016. *Telemedicine and e-Health. Volume 22*, p981–990.⁹

Dermoscopic image acquisition

- The dermatologist should consider whether both polarised and non-polarised dermoscopy images are indicated. If only one dermoscopic image is obtained, it should use polarised light.
- Dermoscopic images should be captured using the same orientation as the corresponding close-up.
- The level of magnification should allow the visualisation of dots and regression structures (if present).
- The image should include a method to define the size of the lesion.
- Sequential imaging should employ consistent imaging protocol and techniques to aid comparability of images over time.

Note. Adapted from ‘Technique standards for skin lesion imaging: A delphi consensus statement’, by C Katragadda, A Finnane, H Soyer, et al. 2017. *JAMA Dermatology. Volume 153, Issue 2*. p207–215.¹⁰

Image review

The dermatologist should review teledermatology images:

- On a display that is less than five years old to mitigate luminance decay.
- Using review software that allows rotation, panning and zooming.
- On a display not affected by reflection. This can be achieved by high brightness display or by reducing the ambient room lighting.

NOTE 5

Teledermatology: Storing images securely

Dermatologists should ensure images, as with other medical records, are transmitted and archived securely to

protect them from theft, damage or alteration. They should also ensure they are retained for the period of time mandated by legislation.

This Note provides information on the physical and technical considerations and steps dermatologists can take to store images securely (Table 5).

REFERENCES

1. Medical Board of Australia. Good medical practice: a code of conduct for doctors in Australia 2014. Available from <https://www.medicalboard.gov.au/Codes-Guidelines-Policies/Code-of-conduct.aspx>.
2. Medical Board of Australia. Guidelines for technology-based patient consultations: AHPRA; 2018 [30 Nov 2018]. Available from: <https://www.medicalboard.gov.au/codes-guidelines-policies/technology-based-consultation-guidelines.aspx>.
3. Australian Medical Association and the Medical Indemnity Industry Association of Australia. Clinical images and the use of personal mobile devices Australia 2014. Available from: https://ama.com.au/sites/default/files/documents/FINAL_AMA_Clinical_Images_Guide.pdf.
4. Abbott L, Miller R, Janda M *et al.* A review of literature supporting the development of practice guidelines for teledermatology in Australia. *Australas J Dermatol*. <https://doi.org/10.1111/ajd.15249>
5. Australian Commission on Safety and Quality in Health Care. Australian Open Disclosure Framework Sydney: ACSQHC; 2015 [1 Dec 2018]. Available from: <https://www.safetyandquality.gov.au/wp-content/uploads/2015/05/Australian-Open-Disclosure-Framework-Feb-2014.pdf>.
6. State Government of Victoria, Australia Department of Health and Human Services, Medico-legal aspects of telehealth services for Victorian Public Health Services; 2015 [March 2015]. Available from: <https://www2.health.vic.gov.au/about/publications/researchandreports/Medico-legal-aspects-of-telehealth-services-for-Victorian-Public-Health-Services>.
7. Primary Care Commissioning with input from the Department of Health, Quality Standards for Teledermatology; UK. 2015. Available from: <https://www.bad.org.uk/shared/get-file.ashx?itemtype=document&id=794>.
8. Australian College of Rural & Remote Medicine, Handbook for the TeleHealth online education module. 2012. Available from: <https://www.acrrm.org.au/docs/default-source/documents/rural-and-remote-medicine-resources/handbook-for-telehealth-online-education-module-final.pdf?sfvrsn=0>.
9. McKoy K, Antoniotti NM, Armstrong A *et al.* Practice guidelines for teledermatology. *Telemed. e-Health*. 2016; **22**(12): 981–90.
10. Katragadda C, Finnane A, Soyer H *et al.* Technique standards for skin lesion imaging: A delphi consensus statement. *JAMA Dermatol*. 2017; **153**(2): 207–15.
11. Australian Medical Association. Medicare requirements for referrals to specialists and consultant physicians Barton ACT Australia, 2017 [30 Nov 2018]. Available from: <https://ama.com.au/article/medicare-requirements-referrals-specialists-and-consultant-physicians>.
12. Gray L, Smith A, Armfield N *et al.* Assessment of Telehealth Implementations and Associated Requirements – Final Report. ACT, Australia: Canberra, 2011.
13. Australian Cyber Security Centre. Cloud Computing Security Considerations Australia: Australian Government; 2011 [1 Dec 2018]. Available from: https://acsc.gov.au/publications/protect/Cloud_Computing_Security_Considerations.pdf.
14. Australian Cyber Security Centre. Cloud Computing Security for Tenants Australia: Australian Government; 2015 [1 Dec 2018]. Available from: <https://www.acsc.gov.au/publications/protect/cloud-security-tenants.htm>.