

Institute of
Medical
Illustrators

IMI National Guidelines

A Guide to Good Practice

Mole Monitoring

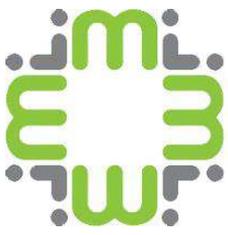
These guidelines have been developed by the Institute of Medical Illustrators, in consultation with specialist advisors. They should be considered a guide to good practice, providing a baseline for auditable standards. If necessary, adaptations may be made to take into account your local conditions.

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clinical photography, design and video in healthcare

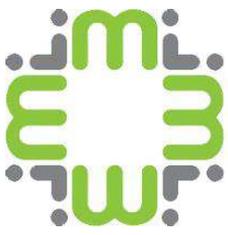
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1. Introduction

Patients with multiple or individual moles seen to be at a risk of developing a skin cancer may be referred to the medical photography department to have photographs taken. These guidelines recommend standard views for documenting patients requiring whole body mole mapping. The standard views are a baseline recommendation (additional views may be required by particular Trusts or users).

Although the photographic standard views in this guideline have been devised for the purpose of mole monitoring, they may also be used effectively for other dermatological conditions such as, eczema, psoriasis, vitiligo, and vascular or pigmented birthmarks. Photographs for monitoring are particularly important in individuals at significant risk of skin cancers such as those with xeroderma pigmentosa or immunosuppressed patients e.g. transplant patients.

2. Background

The lay term for a melanocytic naevus is a “mole”. Moles are made up of the cells (melanocytes) which produce the dark pigment (melanin) that gives the skin its colour. Melanocytes clustered together form naevi.

Most people have moles; some moles (*congenital* melanocytic naevi) are present at birth but most moles develop during childhood and early adult life (*acquired* melanocytic naevi). Moles can be found anywhere on the body including palms/soles, genitals, eyes and scalp.

There are three main types of acquired melanocytic naevi:

- Junctional melanocytic naevi are flat, and usually circular. Their colour is usually even, and ranges from mid to dark brown.
- Compound melanocytic naevi are raised brown bumps, many of which are hairy. Some have a slightly warty surface.
- Intradermal melanocytic naevi are raised, often hairy bumps, similar to compound naevi, but paler in colour.

There are several other less common, types of mole. These include:

- Blue naevus - a harmless mole with a dark blue colour.
- Halo naevus - a mole surrounded by a pale ring which may gradually go away by itself.
- Dysplastic or atypical naevi - these are usually multiple, with irregular pigmentation and shape; these run in some families. They have a greater tendency than other moles to change into a melanoma, a type of skin cancer.

The British Association of Dermatologists advises patients with a large number of moles to examine their skin monthly for moles that are growing or changing by using the ABCDE guide:

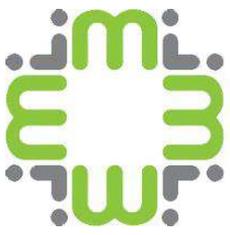
Asymmetry – the two halves of the mole may differ in their shape and not match

Border – The outside edges of the mole or area may be blurred, and sometimes show notches or look ‘ragged’

Colour – This may be uneven and patchy. Notice new colours appearing. Different shades of black, brown, pink and even purple may be seen.

Diameter – Melanomas will progressively change. If you see any mole ‘or mole-like mark getting bigger over a period of weeks to months, tell your doctor.





Expert – Look out for change, and if in doubt, get it checked out by your doctor. If your doctor thinks you have a melanoma or is not sure, they can refer you for free through the NHS to see a skin cancer specialist, usually a Consultant Dermatologist, who is an expert in diagnosing and treating skin cancer.”

British Association of Dermatologists 2013

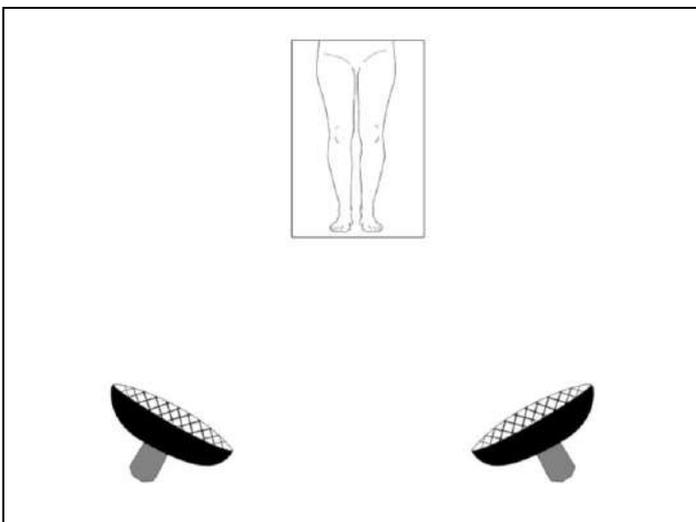
Mole monitoring photographs taken by a clinical photographer are a useful aid for further skin examination and comparison over time - for both the patient and the dermatologist/skin specialist.

3. Mole monitoring photography session

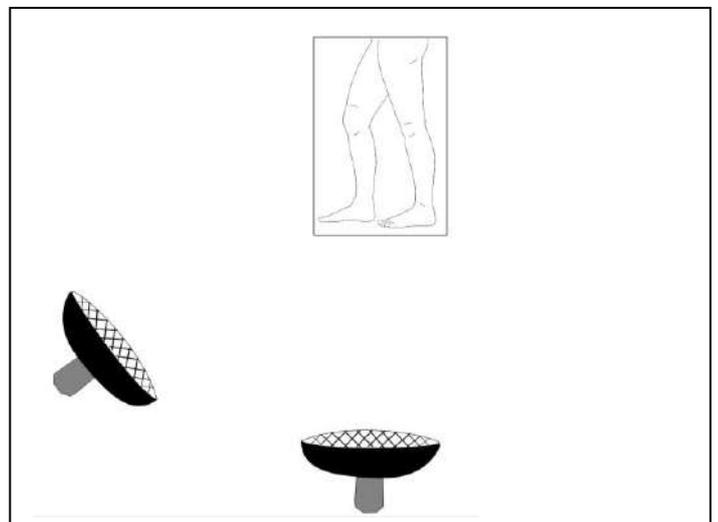
3.1 Studio lighting guide

Mole-monitoring photographs should ideally be taken in a clinical photography studio. The placement of the background or rim lights respectively will depend upon the use of either a back or a white background. The placement of the foreground or key lights should be at 45° angles to the patient in order to achieve repeatable lighting conditions (Figure 1). Consider swinging the lights to the side for the lower body lateral views to ensure that shadows on the inside of the thigh are minimized (Figure 2).

*Figure 1. Repeatable lighting
(light at 45° angle to patient)*



*Figure 2. Move foreground/key lights to
minimize shadows for lower lateral leg
views*





3.2 Equipment and camera settings

If your studio size allows, then you should be able to conduct the whole mole monitoring photography session (standard views and mole close-ups with scale) with a focal length lens of 85mm/105mm. (Smaller studios may require a 60mm lens for half body standard views).

Optimal camera settings are expected to be circa f/22 to ensure a wide depth of field and sharp focus (though different camera and lens combinations may require greater or smaller apertures, consider carrying out diffraction tests on your particular equipment to find your optimal aperture).

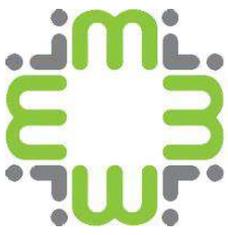
3.3 Magnification/Scale

The Westminster Reproduction Ratios given in the table below may be used to ensure consistency when photographing standard views and close-ups. Reproduction ratios are marked on lens barrels, however, because of the difference in digital CCD sizes compared to 35mm negatives, size calculations (for crop sensors) must be done to ensure that the correct reproduction ratio is used (common crop factor calculations are provided in the table).

Westminster Reproduction Ratio (WRR) (Full-frame sensor)	<i>e.g.</i> <i>Canon 1.6</i> <i>crop factor</i> (<i>WRR x</i> <i>1.6 crop</i> <i>factor</i>)	<i>e.g.</i> <i>Nikon 1.5</i> <i>crop factor</i> (<i>WRR x</i> <i>1.5 crop</i> <i>factor</i>)	Fig.1 & Fig 2 Standard Views
1:25	<i>1:40</i>	<i>1:35</i>	Half-length 01-08 Whole arm 09-16
1:10	<i>1:16</i>	<i>1:15</i>	Shoulder 17-18 Head and neck S19-S24 Both hands and both feet S25-S28 Axilla S29-S30 Sub-mammary/ sub-abdominal S31-S32
<i>1:8</i>	<i>1:12</i>	<i>1:12</i>	<i>Consider this magnification for the closer standard views shown in Fig 3 1-44</i>
1:2	<i>1:3</i>	<i>1:3</i>	Large mole close-up (too large for 1:1)
1:1	<i>1:1.6</i>	<i>1:1.5</i>	Mole close-up

An alternative method for the standard views is to photograph each patient at a scale which provides optimal skin to background ratio for that particular patient. The benefits of this are that the vast differences in size of patients (since you may photograph children *and* adults) would not matter – the standard view would fill the frame ensuring optimal detail and quality. The down-side is that without setting the lens barrel to a fixed reproduction ratio, the standard views will be inconsistent when compared to previous or future photography sessions. Consider noting the magnification used on the request form (or other documentation) if the magnifications used are vastly different from the recommended magnification ratios – this can be useful in the case of adolescent patients.





A fixed scale of magnification is, however, essential for the mole monitoring close-up views. Close-up views of moles should be photographed at life-size (1:1) (with a measurement scale included). (Larger moles may be photographed at 1:2).

3.4 Patient preparation

Chaperone issues should be taken into consideration prior to inviting the patient into the photographic studio (refer to IMI National Guidelines “Chaperone Guidelines” and your local chaperone policy).

The photographer should brief the patient about what will happen. The patient should be informed that photographs are to be taken of their moles in order to provide a record of their appearance and distribution. The patient should feel free to ask questions at any time.

3.4.1 Guidance for removal of clothing

The patient should be asked to step into the changing cubicle and to remove clothing and jewellery or watches which may conceal any areas of the skin. Certain ethnic groups may have beliefs which limit their removal of clothing or jewellery (refer to IMI National Guidelines “Clinical Photography and Cultural Diversity” for advice). Loose hair should be tied up so as not to obscure the face, neck, back or shoulders.

If the patient is uncomfortable with removing all of their clothing at once, then the session can proceed in two parts; removing clothing from arms and torso and then removing clothing from below the waist (allowing the patient to redress their top half).

Whole body photography often requires the removal of underwear and patients should be encouraged to do so. Female patients should be requested to remove their bra as straps can obscure moles on the trunk, especially on the back - a common site for problematic pigmented naevi. If a patient is uncomfortable with the removal of briefs, it is best practice to explain that without clinical photographs of this area, their dermatologist will not be able to efficiently compare the moles over time; therefore, the patient should be extra vigilant to any change in moles in this area. If the dermatologist has specifically requested photography of genital areas or buttocks, the briefs may be removed for these photographs towards the end of the session to minimise embarrassment.

If a patient chooses to keep their underwear on for the photographs, this can be easily accommodated by encouraging them to rearrange underwear in order to reveal as much skin as possible e.g., fold down underpants to reveal more of the lower back and stomach, fold up underpants to reveal more upper thigh/groin.

3.4.2 The photographic session

Once the patient steps out from the changing cubicle, the photographic session should proceed swiftly and efficiently in order to reduce the amount of time that the patient must stand undressed.

The photographer should explain or demonstrate the poses for each change of position or may use the illustrations in section 3.3 to help guide the session).

Once the photographic session is complete, the patient should be allowed to redress in the changing cubicle.



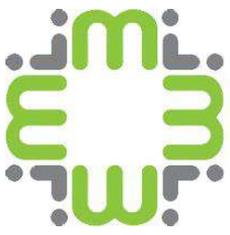


3.5 Standard views illustrations

The photographs should be taken in a methodical order, beginning with the standard view(s) followed by any close-ups required (with scale), then dermoscopy as required.

The following standard view illustrations (Figures 3 and 4) may be used as a baseline recommendation to develop a system of photography which is suitable for your Trust/user. Alternative standard view methods are discussed in section 3.7.





*Figure 3.
Standard
views for
mole
mapping*

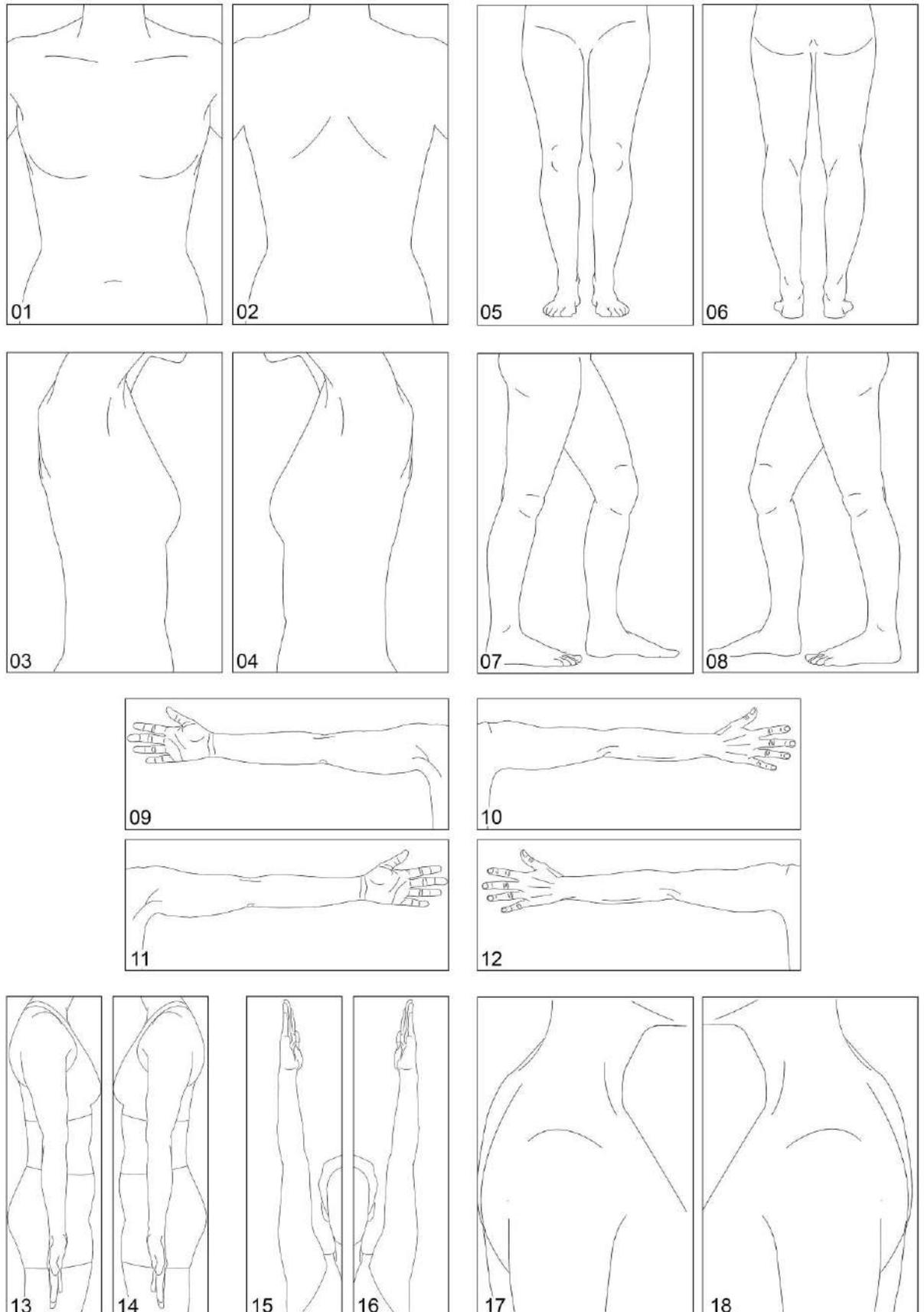
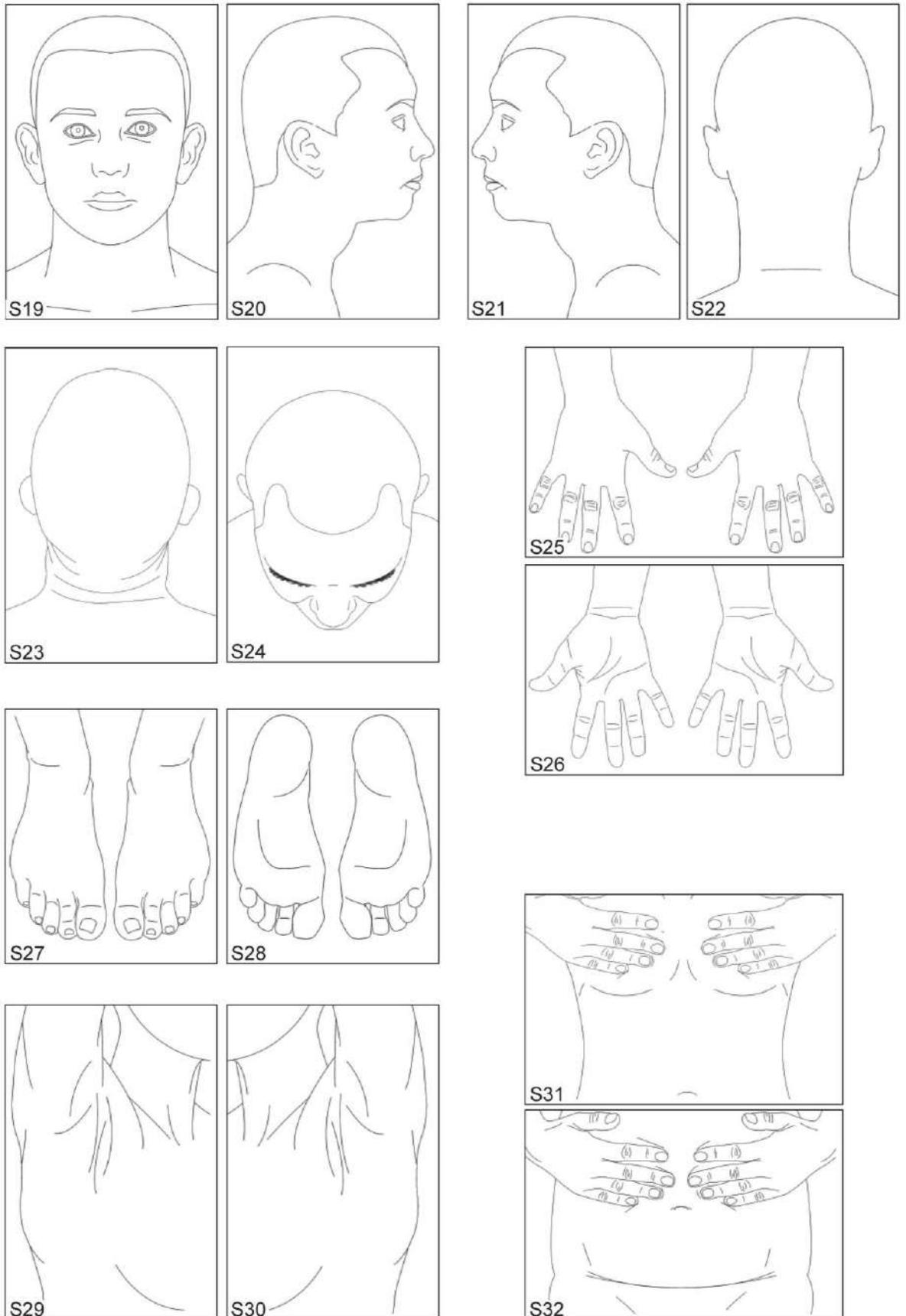
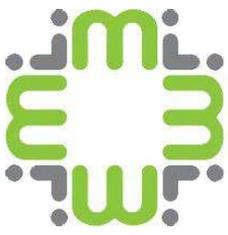




Figure 4.
Supplementary
views for mole
mapping





3.6 Standard views descriptions

Figure 3 Standard views:

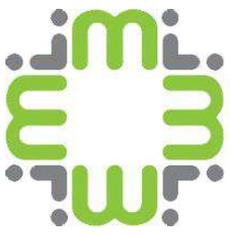
- 01 Upper body AP (from under chin – chin lifted, to pelvis, not including arms)
- 02 Upper body PA (from neck hairline to pelvis, not including arms)
- 03 Upper body right lateral (from under chin to pelvis - arm raised)
- 04 Upper body left lateral (from under chin to pelvis - arm raised)
- 05 Lower body AP (from pelvis to soles of feet)
- 06 Lower body PA (from pelvis to soles of feet)
- 07 Lower body right lateral (from pelvis to soles of feet)
- 08 Lower body left lateral (from pelvis to soles of feet)
- 09 Right arm AP (arm held horizontally, palm facing camera, from shoulder to fingertip)
- 10 Right arm PA (arm held horizontally, back of hand facing camera, from shoulder to fingertip)
- 11 Left arm AP (arm held horizontally, from shoulder to fingertip)
- 12 Left arm PA (arm held horizontally, from shoulder to fingertip)
- 13 Right arm lateral (arm held down, thumb towards camera) from shoulder to fingertip)
- 14 Left arm lateral (arm held down, thumb towards camera) from shoulder to fingertip)
- 15 Right arm medial
(patient seated, facing camera, arm lifted, little finger towards camera, from axilla to fingertip)
- 16 Left arm medial
(patient seated & facing camera, arm lifted, little finger towards camera, from axilla to fingertip)
- 17 Right shoulder (patient seated, view of whole shoulder area from jawline to mid-upper arm)
- 18 Left shoulder (patient seated, view of whole shoulder area from jawline to mid-upper arm)

Figure 4 Supplementary views:

- S19 Head and Neck AP (hair tied back and lips slightly parted)
- S20 Head and Neck Right Lateral (hair tied back and lips slightly parted)
- S21 Head and Neck Left Lateral (hair tied back and lips slightly parted)
- S22 Head and Neck PA
- S23 Top of ears/head/scalp (head tilted back)
- S24 Top of forehead / nose / cheeks (head tilted forwards)
- S25 Both hands Dorsal (fingers slightly parted to show web spaces)
- S26 Both hands Palmer (fingers slightly parted to show web spaces)
- S27 Both feet Dorsal
- S28 Both feet Plantar
- S29 Right Axilla (patient stands in an oblique position to camera)
- S30 Left Axilla (patient stands in an oblique position to camera)
- S31 Sub-mammary (breasts lifted)
- S32 Sub-abdominal (abdomen lifted)

Other areas such as, interior/posterior ears, genitalia, beneath/between buttocks, and between toes and fingers may also need to be included if specifically mentioned on the photographic request.

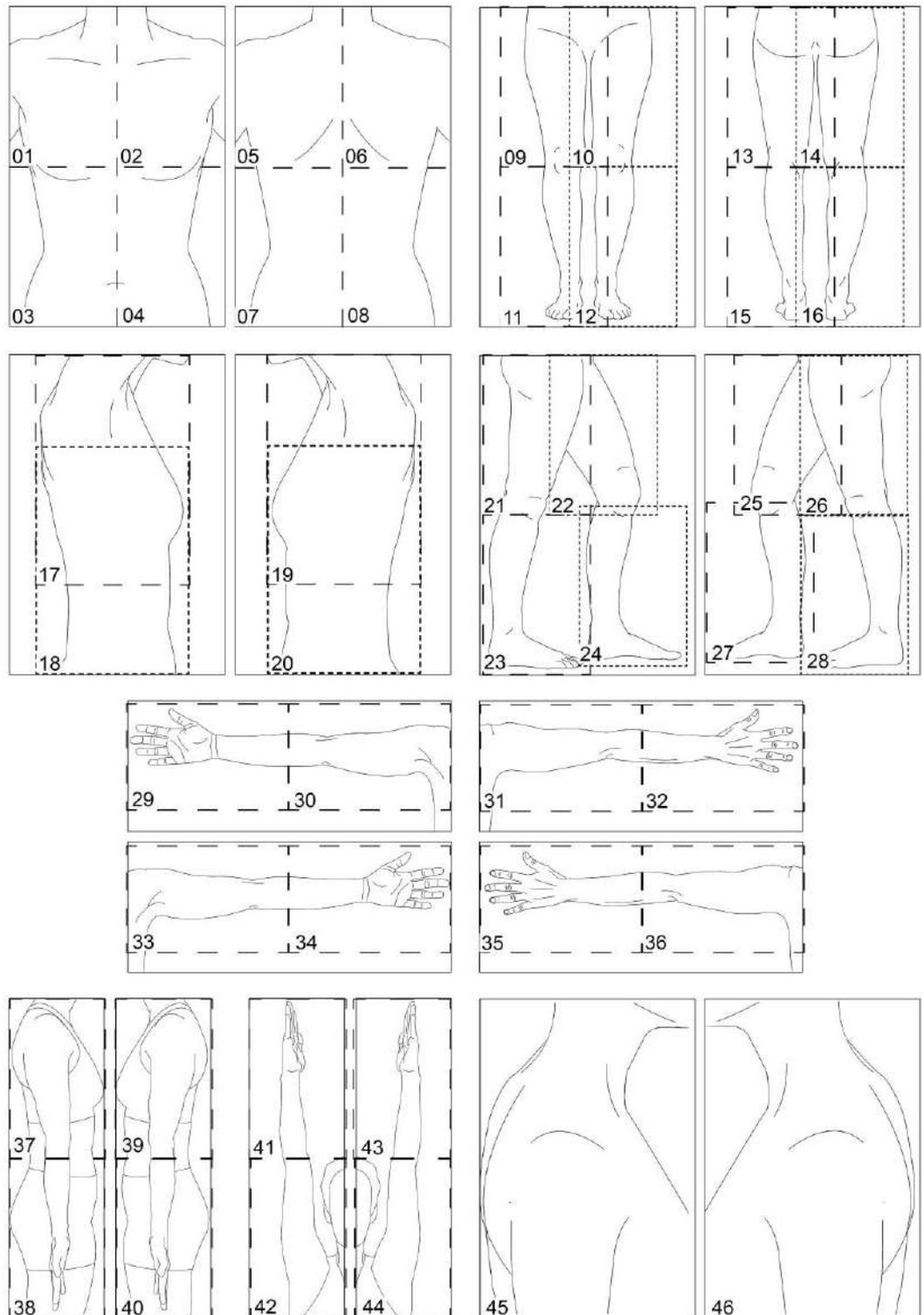




3.7 Alternative standard view methods

There are many options for full body mole monitoring standard views. Some Trusts/ users may request closer, more details standard views; others may wish to have fewer standard views. Figure 5 gives an example of how the recommended baseline standard views may be sectioned into more detailed areas if required by your users:

Figure 5.
An example of how
the standard views
may be sectioned
into 46 closer,
more detailed views





Whichever method of mole monitoring standard views you and your users decide upon, you must have a method of photography which is efficient for the patient and provides the results required for effective monitoring of their moles. The method must be fit for use by the end user (usually the patient's clinician or the patient themselves) *and* must suit the method of viewing (e.g. database viewing on monitors and devices or hard copy printing (see section 4 - output and usage of mole monitoring photographs)).

3.8 Close-up views

Ideally, your dermatologist should mark the moles that they require close up photographs of with a skin marker pen using an agreed marking method and a clear numerical system. The marking method may be a short line with an arrowhead or a dashed or entire circle encompassing the mole. Whichever method is applied, beware that other surrounding moles are not obscured and that the ink does not 'run' when using gel/oil with dermatoscope views (see section 3.9).

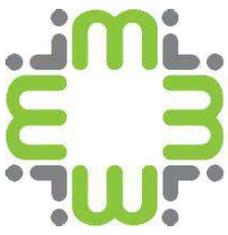
If your dermatologist highlights the moles using a diagram on the clinical photography request, you may be required to number the moles yourself. A consistent, sensible approach should be used when numbering moles - always number from top to bottom, from right to left, AP to PA.

Close-up views of moles should be photographed at life-size (1:1) with a measurement scale included. A self-adhesive scale is recommended as they can be discarded after use (there are several suppliers available or they may even be produced in-house). ABFO No2 L shaped scales or other such re-usable scales may also be used and should be cleaned according to local infection control procedures after each use.

Aim for the measurement lines of the scale to be as close as possible to the mole, this often means that the scale is best placed beneath the mole. As always with measurement scales, ensure that the scale is flat (not curved) and that it is aligned parallel to the lens in order to avoid any distortion. See Figure 6.

Figure 6. Example of close-up mole monitoring using a dashed circle marking method and a self-adhesive scale





3.9 Dermatoscope views

Dermoscopy is a technique used to see a variety of patterns and structures in lesions that are not discernible to the naked eye. Dermoscopy (also known as dermatoscopy or epiluminescence microscopy) involves the use of a dermatoscope to examine skin lesions. Photography of suspicious moles through a dermatoscope provides a record unobstructed by skin surface reflections of deeper features and structures. Skin cancer specialists use dermoscopy images to help distinguish benign lesions from malignant lesions.

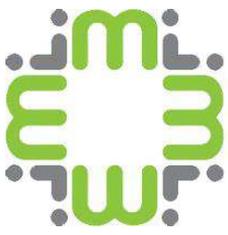
There are two main types of dermoscopy, fluid immersion and polarized. Fluid immersion involves the use of a liquid (often oil or alcohol) between the dermatoscope and the skin; polarized lenses do not require a fluid. If you are using fluid with your dermatoscope, and the dermatologist has marked the suspicious moles with a skin marker, take care to ensure that the ink does not 'bleed' into the mole causing a colour change. If this happens, wipe the area of skin and the dermatoscope to remove excess ink, and then re-apply the fluid and dermatoscope. (NB! please be aware that the mole may have been carefully marked for biopsy or mole removal straight after photography – therefore, if after taking the dermatoscope photograph, the markup has completely disappeared you must report this to the dermatologist.

The dermatoscope is placed lightly against the skin to take the photograph. It is important to ensure that the whole mole can be seen in the image as the dermatoscope provides a magnified view of the mole. If the mole is large, it may be necessary to move methodically across the mole, from top left to right, to bottom left to right (as if reading).

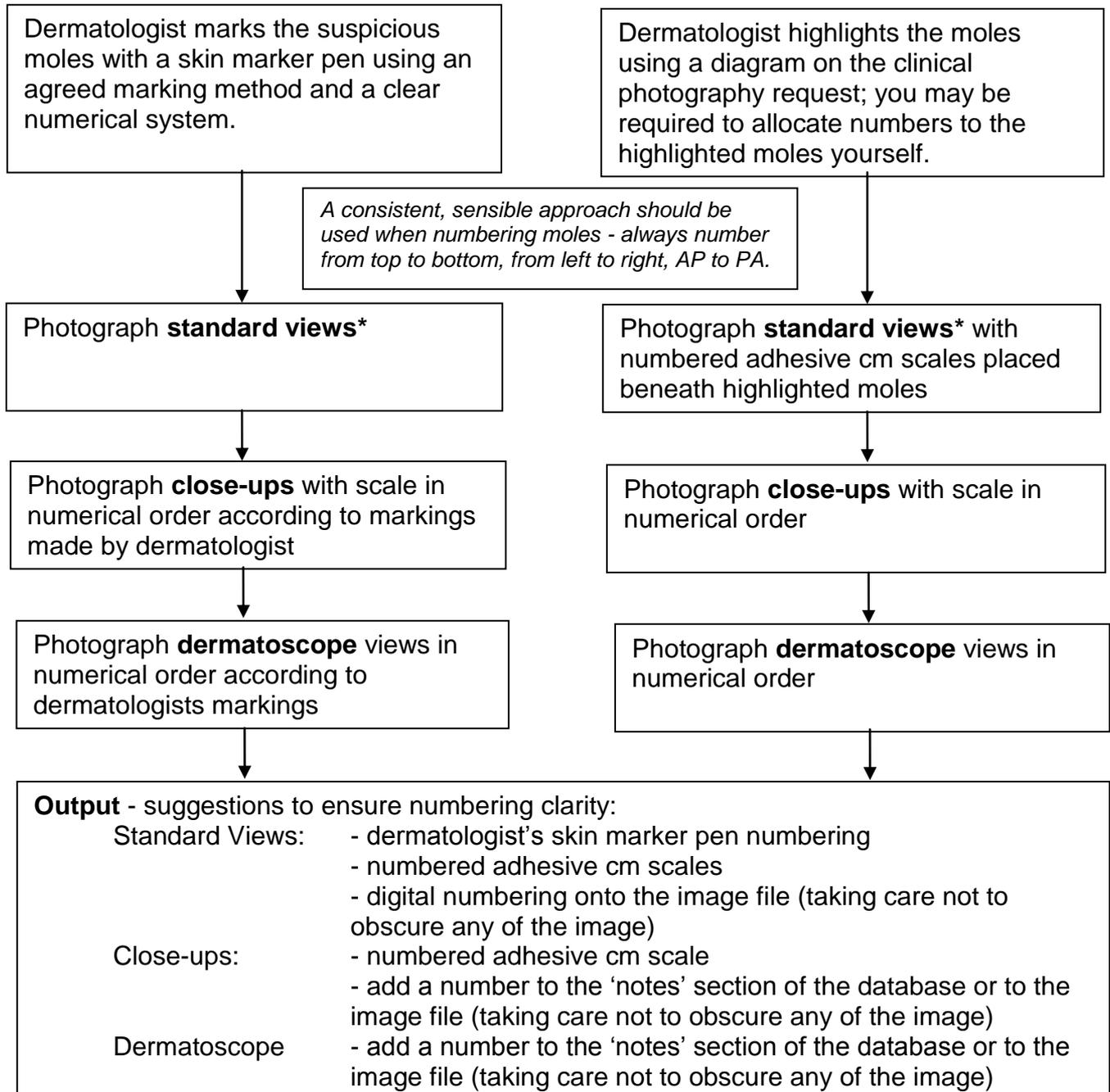
4. Output and usage of mole monitoring photographs

The end user of the mole monitoring photographs (dermatologist, nurse specialist, or the patient themselves) is checking for changes in mole distribution or changes to specific moles in order to help them to detect early signs of skin cancer. Mole monitoring views, close-ups, and dermatoscope images should be organised in a way suitable for a clinician to use in a follow-up clinic, or for the patient to use at home. The precise locations of each mole, close up and dermatoscope image, should be absolutely clear to the user. Your method will depend upon the output of your department's clinical photographs (prints/digital), and the options for providing clarity are varied; **but please provide a clear solution for your end user** (see examples below).



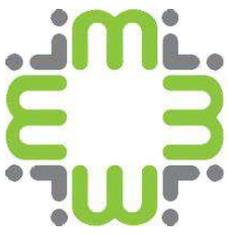


Examples of clear output solutions:



* For added clarity you may wish to photograph the torso standard views (01-04), (then torso (01-04) with numbered scales if chosen method), then torso close-ups with scales, then torso dermatoscope views, and then move on to the legs standard views (01-08) etc. This is particularly useful with patients who have many suspicious moles and ensures that the dermatoscope views are easily located for each area of the body.





Be aware, that the patient may return for future mole monitoring and if 'extra' moles are then chosen by the dermatologist to be closely monitored then these moles may be numbered beginning with, for example, number 12 – since it would be in addition to the eleven moles that you will have photographed on their previous visit. It is for this reason that a numerical system would be preferred over alphabetical.

If hard copy printing, mole monitoring records should be printed as large as possible (e.g. one standard view per A4 sheet, or 10"x8" prints), and the close-ups should be printed to life size (1:1) and/or at an enlarged ratio of 3:1 (so that the detail in the mole can clearly be seen). Remember also, that including plenty of the normal skin that surrounds the mole can also be useful to the specialist/patient for comparing colour /condition changes – so don't be tempted to crop your mole close-up too tightly (especially if the mole has a paler surrounding area or 'halo'). If mole photographs are viewed digitally, then it is expected that the quality of the close up photographs will be sufficient to zoom in to at least x3 life size.

4.1 Patient self-monitoring

Your clinician may request that copies of mole monitoring photographs are provided to the patient for self-monitoring at home. This can be an essential tool for the patient and the clinician when used properly, since it allows the patient to be sure of whether the mole has changed in appearance before they arrange to revisit their clinician.

Mole monitoring copies for patients can be provided either as hardcopy prints or as digital copies on encrypted media, for example (ensure that the media is fit for the use of the individual patient). Medical Photographers have a clear duty to protect the patient and their Trust and therefore must follow very strict workflows of encryption, personal patient collection and sign off for such copies. The output and process will entirely depend upon your local information governance / confidentiality / information technology policies.

4.2 Teledermatology

Teledermatology tends to be carried out in Primary Care Practices and involves referring an image of the skin of a patient together with relevant history of the condition to a clinician for advice. It is not a substitute for face-to-face consultations, but can be a complementary service in circumstances where it serves the interests of patients and offers better use of resources.

Primary Care Commissioning's document entitled 'Quality Standards for Teledermatology' sets standards for photography along with other aspects of the service which should be managed by the multidisciplinary teledermatology team (selection of patients, consent, staff training, referral, communication, record-keeping, audit etc.).

The photographer's role within the teledermatology team should be to provide high quality, clear and usable images, and to deliver them in accordance with patient confidentiality and clinical governance procedures.





5. Bibliography

'Melanocytic Naevi' British Association of Dermatologists Patient Information Leaflet, October 2013

The ABCDEasy way to check moles, British Association of Dermatologists Patient Information Leaflet, April 2013

Quality Standards for Teledermatology: Using 'Store and Forward' Images, a supplement to *Quality Standards for Dermatology: Providing the Right Care for People with Skin Conditions*, published by Primary Care Commissioning in 2011 and is available at <http://bit.ly/VayyN2>

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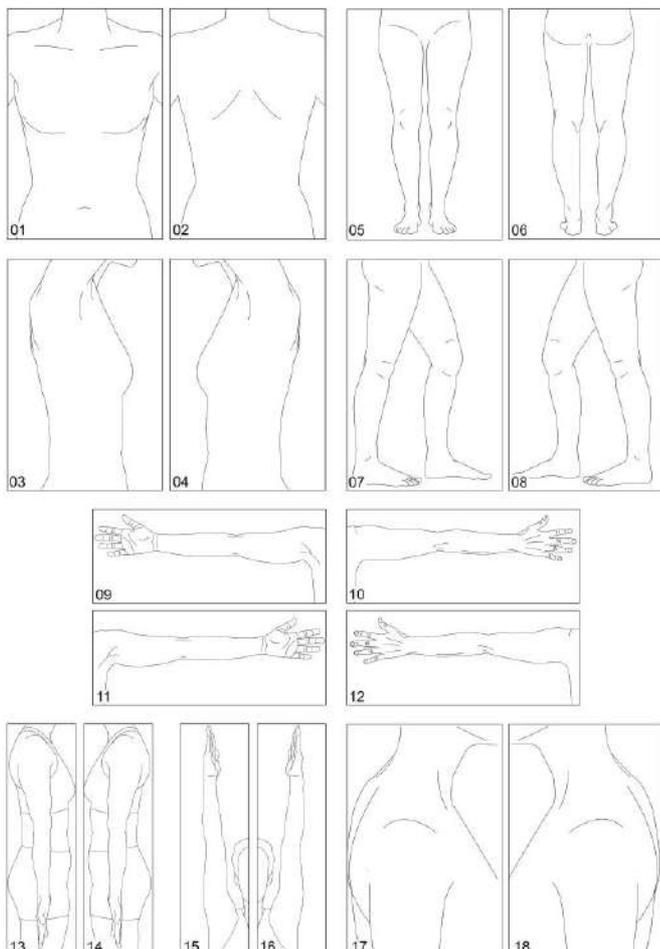




7. Mole Monitoring - Quick reference guide

- Offer a chaperone.
- Explain the process to the patient and encourage the removal of underwear when necessary.
- Photograph the recommended mole monitoring standard views along with any requested supplementary views. Refer to the Westminster Reproduction Ratio table (section 3.3) or fill the frame with each view (no set magnification ratio).
- Take requested close-up views at 1:1 (life size) with a cm scale included.
- Take requested dermatoscope views (if mole is large, move methodically across the mole, from top left to right, to bottom left to right, as if reading). Take care to ensure that excess ink does not obscure the mole.
- Be organized and ensure that you know exactly which mole close-up and dermatoscope image belongs to precisely which mole on the location standard view.
- Have a clear method (e.g. numerical labelling), to indicate each mole close up and dermatoscope image's precise location on the body when preparing the set for output (whether digital or hardcopy)

Standard Views



Supplementary Views

