Faculty of Forensic & Legal Medicine

PICS Working Group Guidelines on photography

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Foreword

The initial PICS (Photography in Custody and SARCs) guidelines were published in May 2017 and provided an outline on suggested best practice when photographing patients in the custody or SARC (Sexual Assault Referral Centre) environment. Since then, data protection legislation has been updated across Europe, including the UK, with the introduction of the General Data Protection Regulation 2016/679 ('GDPR') in May 2018. This updated PICS document discusses such changes and the effects that they may have upon photography of patients.

These guidelines are predominantly intended for healthcare professionals (HCPs) who work in police custody and SARCs. As independent practitioners, custody and SARC HCPs face technical, ethical and legal issues beyond those usually faced by clinicians in more conventional settings.

The PICS Working Group is a multi-professional group that was established in October 2015. The guidelines cover salient features regarding photography that might test the custody or SARC practitioner. It is hoped that they will allow safe and best practice when photographing patients and this may assist in the criminal justice system.

It should also be emphasised that training clinicians in the art of photography is not intended to undermine or displace SOCO/CSI (Scene of Crime Officer/Crime Scene Investigation) units or medical/clinical photographers, whose role is one of evidence preservation, integrity, recovery and recording. The guidelines are designed to help raise standards of HCPs who document injuries as part of their daily repertoire. They outline the basic principles of medical photography and do not consider more advanced techniques such as alternative light sources (e.g. infra-red and ultra-violet) or cross-polarisation techniques, which might enhance the appearance of injuries.

NB: injuries are usually more easily visible on lighter skin than darker skin. This has been borne in mind for illustrative purposes in this document.

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Declaration of interest: the lead author runs a medical photography course for clinicians: 'Patient Focused!'

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1. Key points

- It is advisable that the clinician should complete an approved course in clinical photography prior to undertaking photo-documentation in the custody or SARC environments.
- Prior to the clinician photographing patients, there should be a local policy in place outlining the best practice in the photography of patients.
- Photo-documentation of injuries by clinicians can offer great potential benefit to assist patients and the criminal justice system, enhancing and reinforcing written descriptions and hand-drawn body diagrams. The alleged mechanism of injuries must be documented.
- The camera system should be dedicated specifically to such work. A digital SLR (Single Lens Reflex) camera represents the gold standard, though other camera systems (e.g. compact and bridge cameras) are acceptable. Personal cameras and smartphones should be avoided wherever possible and should only be used as a 'last resort' in emergency situations as they may create problems surrounding information governance and audit trails, the photographs may be deemed inadmissible, and the equipment may also be seized as part of an on-going police investigation. Cameras on mobile phone cameras and tablets often have unknown focal lengths which may result in unrecognised lens distortion.
- The camera should be stored securely at all times.
- The camera's internal clock should be adjusted in line with the custody or SARC clock.
- Consent should be obtained, either orally or written, for photo-documentation of injuries. If the patient lacks capacity, photography may be conducted with consent from a person with parental responsibility (in the case of a child, or on the basis of best interests of the patient or of public interest. An audit trail of the integrity of the images should be established thereafter.
- There is no need to embed date and time into the images. If the issue of timing of photography becomes critical, this information is already stored in the images' metadata.
- Consideration should always be given to the need for a chaperone, and professional guidelines and local policies should be consulted in this regard.
- Practice shots prior to the patient entering the medical room may help the clinician decide on camera settings for different lighting and room size.
- The clinician should aim for a fast shutter speed, low ISO and mid-high f-value.
- Whenever possible, background 'clutter' should be moved away from the subject. Background sheeting may be employed to allow for a clear backdrop.
- Each injury should be taken with the camera plane at 90° to the skin, to reduce 'angular distortion' of dimensions.
- A 'three photo principle' of location-photo, close-up, and close-up with scales should be employed with each injury.
- Images should be checked as they are being taken, and repeated if required. In particular, the clinician should check for over and under-exposure, blurring and injury 'cut-off'. Images should not be deleted if they are 'bad' photos.
- If the wound is bloody or dirty, 'before and after' photos should be taken whenever possible, provided consideration is given beforehand to the need for involvement of CSI/SOCO for swabbing, blood spatter analysis, evidence gathering etc. Health and safety policies and procedures should be adhered to.
- It is good practice to record, in the patient's medical notes, the first and last image numbers of the photos taken. This helps identify the images as belonging to a particular patient, which may be particularly important when photographing several patients in quick succession. 'Head shots' may also be considered, though 'Identifier cards' may be more appropriate with intimate images.
- The images should be downloaded onto a password-protected secure system, e.g. Cloud system, hard drive or non-rewritable CD/DVD ('CD-R' or 'DVD-R') as soon as possible. This is designated the Master Copy. A non-rewritable copy of the Master Copy should also be created as soon as is practical and will be designated as a Working Copy.
- Unadulterated copies of the Working Copies should be submitted to the Courts, with a full audit trail of the images being available, if requested. Any alteration of images such as cropping, lightening and contrast enhancement is acceptable, but should be explained at the time of submission of the images and should accompany an unadulterated copy of the Working Copy.
- Once the images have been downloaded onto a secure system, the SD card can be formatted.
- Legislation surrounding the handling of images should be adhered to.

2. Introduction

Despite the rapid evolution and adoption of digital technology in mainstream society, there has been reluctance by many practitioners to use digital cameras to document clinical findings such as injuries. However photographic images can be immensely valuable in supplementing written descriptions and hand-drawn body diagrams of injuries, and when properly taken, will assist in the justice process.

The Photography In Custody and SARCs (PICS) working group was established by the Faculty of Forensic & Legal Medicine in 2015 to provide guidelines on clinical photography for those clinicians who work within the police custody and SARC (Sexual Assault Referral Centre) environments. It is a multi-professional group, with expertise in clinical forensic medicine, photography, legislation and the care of victims of torture. This document builds on previous work from the National Policing Improvement Agency (dissolved in 2013 and replaced with the National Crime Agency, NCA), the Association of Chief Police Officers (replaced in 2015 by the National Police Chiefs' Council, NPCC) and Home Office Guidelines.[1, 2]

PICS intends that these guidelines will assist in achieving safe and best practice. Consideration is given to the issues of equipment, technique, legal and ethical issues and training in clinical photography. The guidelines will be subject to regular revision as and when dictated by case law, changes in statute, changes in practice and technological developments.

3. Considerations before photography

3.1 Camera, smartphone or tablet?

PICS advises that, whenever possible, a camera that is used for documentation of injuries should be dedicated to such a purpose. The danger of 'mixing business with pleasure' and reaching for a personal phone that also contains images of family and friends cannot be overstated. To allow even the possibility of such images to be seen by family or friends would be wholly inappropriate for the patient's welfare and could be disastrous for the clinician's career. In addition, the risk of patients' images being accidentally uploaded to a worldwide audience in perpetuity to search engines and social media can also not be under-estimated. Therefore, employing a camera that is used purely for professional use is to be recommended.

A digital SLR (Single Lens Reflex) camera is arguably the best option for taking high-quality images. These cameras have changeable lens systems and tend to have more capabilities than compact cameras, bridge cameras, mobile phones or tablets. However, SLRs are technically more difficult to master than the simpler alternatives and the clinician must therefore be confident on the technical aspects of using his or her SLR, otherwise he or she will merely end up with badly-taken photographs on an expensive piece of equipment. Moreover, SLRs tend to be bulkier and more expensive than their counterparts and this has to be borne in mind if purchasing a new system. Compact and bridge cameras have the distinct advantage of being technically straightforward, easier to learn to use and usually cheaper to purchase.

There may be rare occasions, (e.g. where the first-line camera is not working) where there may be no alternative to using a personal mobile phone or tablet. The clinician and patient should accept that, in such a scenario, there may be issues further down the line in proving the validity of the audit trail from the taking, storage and submission of those images and that the clinician may be forced to submit the phone or tablet as part of the investigation.[3] Additionally, cameras on mobile phones and tablets tend to have short focal lengths (e.g. 30 – 50 mm equivalent) and this can produce distortion of sizes in forensic photography.

The new range of Mirrorless SLR cameras are a relatively new development and represent a good compromise between smartphones and digital SLRs. They are lighter in weight and less bulky than digital SLRs and have larger sensors than smartphones. They have a 'traditional' camera appearance which looks more authentic in clinical situations. It is worth considering that using a (non-personal) smartphone could cause resentment from the patient who may regard the clinician as using his/her personal smartphone. In addition, with increasing numbers of crimes being photographed by the perpetrators, photographing a patient with a smartphone may cause distress to the patient by causing them to re-live the assault.

It is of interest that NHS Digital has accepted that many hospitals and health facilities offer a BYOD (Bring Your Own Device) or BYOX (Bring Your Own Everything) policy[4]: this means that the individual clinicians can use their personal devices at work, in line with a locally-agreed policies, but the individual is then responsible for the correct working and data protection issues that might arise. It could be argued that such policies are merely passing information governance responsibilities from the organisation onto the clinician, and are tenuous at best.

The camera should be stored securely, preferably under lock and key when not in use. It should not be stored in the clinician's car: aside from the obvious security concerns with leaving a camera in a vehicle, condensation is likely to appear on the camera by the following morning. Moisture is disastrous for the working of a camera and may result in damage to the camera and images.

It is good practice to have the charger stored in the same location as the camera. Rechargeable batteries are preferable to single-use batteries and are economically superior. A 'battery grip' (Fig. 1) is a relatively inexpensive piece of equipment that is available for digital SLRs. It inserts into the base of the camera and allows the system to work from two separate rechargeable batteries, rather than just the one. If the camera uses non-rechargeable batteries, it is worth investing in a spare set of batteries for emergency situations.

Fig. 1 *A battery grip allows for an extra battery to be stored.*

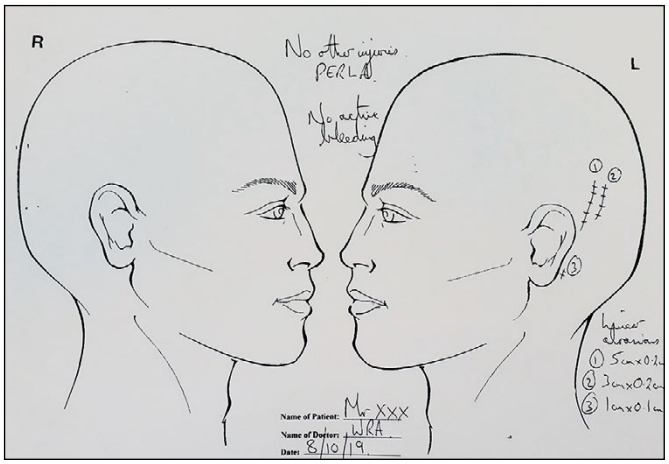
As different clocks frequently show dissimilar times, it is advisable to adjust the camera's clock in line with the custody or SARC clock, thereby ensuring that the electronic log is comparable to the times stored on the camera's images. There is no need to embed the date and time into the photos (the 'date stamp'): if the timing of the photos becomes an issue, this data can be easily inspected in the photos' metadata (the 'hidden' data contained within the electronic photo file). If dates and time are embedded into an image, they have the disadvantage that they might obscure a part of the wound or a significant anatomical landmark and can also divert the viewer's attention away from the main features of the photo.

Many digital cameras will not automatically alter their clocks to account for British Summer Time, and the clinician may therefore have to manually alter the camera's clock twice per year. Failure to do so could potentially look embarrassing in statements, and the clinician would have to account for the one hour discrepancy between the electronic log and the time that the photo was taken.

The clinician should appreciate that the camera is 'All or nothing', i.e. if the camera is lost, so are the images. It is therefore advisable to download the images onto a secure system as soon as it is practically possible. Remember that accidental pressing of 'Delete' or 'Format' may also result in loss of some or all of the images. (Storage of images will be discussed on page 13).

3.2 Body maps

Although the image from a digital camera is unquestionably superior to that resulting from hard graft with a pen and paper on a traditional body diagram (Fig. 2), PICS would suggest that body diagrams still play a part in supplementing injury documentation, by helping with logging the descriptions of the injuries and demonstrating the distribution and clusters of injuries. There will also be occasions when an injury cannot be captured with a photograph, such as an area of tenderness, or a painful shoulder from being rear-handcuffed, and a body diagram would therefore be essential. Additionally, some patients refuse photo-documentation but will agree to body diagrams being completed.



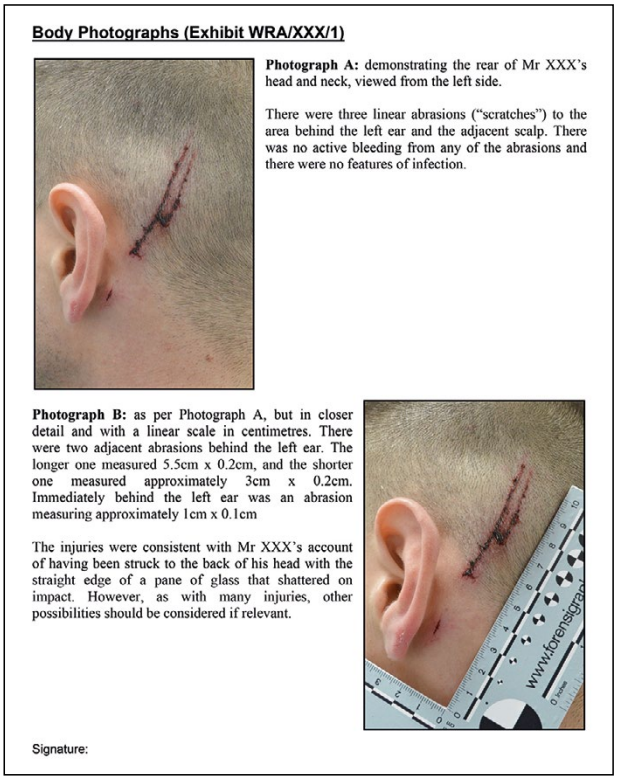


Fig. 2 *The same injuries described in two different ways. Traditional body diagram vs. photographic images embedded into an A4 document.*

3.3 Medical room

The clinician should familiarise him or herself with the environment in which the images are being taken: most commonly a medical room, but the clinician may be called to other locations such as a police cell, hospital emergency department or ITU. Practice shots, e.g. on equipment in the medical room, allows for the clinician to alter camera settings prior to meeting the patient. Assessing the environment will also allow for the clinician to calculate the best positioning of the patient, e.g. standing, sitting in a chair, lying on an examination couch. Preparation is all-important as, once the patient is present, the opportunities for re-arranging furniture and checking camera settings are greatly reduced. The photography will run more smoothly with this pre-planning.

Medical rooms are frequently very cluttered environments and do not have the order and discipline associated with a photographic studio. The medical cabinet, sink, chairs, posters, and computer are usual accessories in the medical room and can provide distraction in a photo by steering the viewer's gaze away from the main focus of the photograph. 'Mergers' are a particular type of clutter (Fig. 3) where a line or object appears to be emanating from the subject's body. Again, inspecting the local environment and moving potential clutter or the subject away from the merger are simple ways of improving the photographs.

Fig. 3 *Mergers are common features of working in cluttered environments.*

Ideally, the subject should be positioned approximately 2-3 feet from the background (to help reduce shadowing) and an appropriate depth of field used to ensure the background is not sharp. A clear space on a wall may offer a perfect clutter-free backdrop, but if this is not possible, other options include the use of a small portable screen or using background sheeting that is stored and rolled-up until required (Fig. 4). (If the background sheeting is stored folded rather than rolled, undesirable square patterns will appear once the sheeting is unfolded). The sheeting should also be made of off-white or neutral grey matt plastic that does not reflect excessive light and that is easy to wipe away blood, secretions and dirt. However, if there are any particular 'DNA concerns' in a given case, it is advisable to use a disposable background such as a single-use couch cover.

Fig. 4 *Plastic sheeting can be used as a backdrop for a table or examination couch.*

Fig. 5 *Paper towelling rips and folds very easily with the patient's weight.*

Paper towelling that is used to cover examination couches does not make for a good background. Although it appears flat and even when laid out on the couch, it will tear and ruffle with the patient's weight and this will detract from the photo. (Fig. 5)

3.4 Lighting

Not infrequently, the main limitation to good photography within a medical room is poor lighting. This is often best-illustrated in older buildings where the needs of the medical room were low on the architect's priority list. A darkened room results in less light striking the camera's sensor, making for darker and grainier images. When there is insufficient ambient light, the options available include:

1. 'Raising the ISO'. This feature makes the sensor more sensitive to light. Unfortunately, however, in doing so, the sensor also becomes more sensitive to everything else, including artefact and 'noise'. The final image will inevitably appear more 'grainy', thereby reducing the overall quality of the image. A low ISO is desirable, e.g. ISO 200-400.
2. If the photographer is shooting in manual or semi-automatic mode, there is greater opportunity to tailor the camera's settings to a particular situation:
   a. Increase the exposure time (reduce the shutter speed), e.g. from 1/100 of a second to 1/60 of a second. By keeping the shutter open for longer, more light enters the camera to strike the sensor. The main disadvantage of increasing the exposure time is the greater risk of 'camera shake' as the camera has to be kept still for longer, thus raising the opportunity for the image to appear blurred. A fast shutter speed is therefore desirable whenever possible, e.g. 1/100s-1/200s.
   b. Reduce the f-stop (or f-value): the f-stop is an indicator of the diameter of the camera's aperture, which sits in front of the camera's sensor. It can be automatically or manually altered to allow more or less light into the camera. Increasing the diameter of the aperture (i.e. reducing the f-stop, e.g. to f-2.8) allows more light to enter the camera but the periphery of the image is more likely to appear blurred. A higher f-stop (e.g. f-14) will allow sharper images to be obtained but may cause the image to appear darker. A mid-high f-stop is usually preferable for clinical photography, e.g. f-8 to f-11.
   c. The photographer may perform a combination of each of these, but should be aware that altering one may have a knock-on effect on the other settings ('the exposure triangle').

Another option available to the photographer is to increase the ambient lighting. This can be achieved by using an additional light source such as a built-in or external flash, or by employing strategically-placed light reflectors or external light sources, such as a 'soft-box'. When dealing with detainees, the clinician should consider that such pieces of equipment could be attractive to volatile individuals who may merely regard an expensive piece of kit as a make-shift weapon. Bulky and costly equipment should be used with caution as it could easily be damaged (or cause injury to the clinician) in the wrong hands.

3.5 Consent

Generally speaking, it is not acceptable for a clinician to take photos of a patient without his or her consent. This therefore differs from the entitlement of police officers in England and Wales who, under the Police and Criminal Act (PACE) 1984 (s.64a), can legally take photographs of individuals and 'may use reasonable force, if necessary, in the exercise of the power'[5] In Northern Ireland, the photographing of suspects in police custody, with or without consent, is covered under Section 64a of *Police and Criminal Evidence (Northern Ireland) Order 1989 (SI 1989/1341)*[5b] and in Scotland under *Section 18 of Criminal Procedure (Scotland) Act 1995*[5c]

The General Medical Council (GMC) has outlined the requirement of consent in its document *Making and using visual and audio recordings of patients*.[6] They distinguish between photography as part of the on-going medical management (primary purposes), and photos taken for secondary purposes (e.g. for teaching, research and audit). The need for consent is clear, though this there is no specification that the consent has to be signed by the patient (for primary purposes) rather than oral consent. For secondary purposes, the GMC specifies that:

'It is good practice to get the patient's written consent, but if this is not practicable, the patient's oral consent should be obtained. Written consent or a record of oral consent should be stored with the recording.'[6, para 24]

That oral consent is acceptable when taking photographs in the custody environment is to be welcomed, as many of the detainees have poor literacy skills, drug and alcohol dependencies, aggressive mood swings and behavioural issues. The signing of a consent form may be nigh impossible and may merely meet with suspicion and resentment. There is also the consideration that the patient may not have understood the details of the form, but was still prepared to sign on the dotted line. The act of handing a pen to an unpredictable and volatile patient may also pose a threat to the clinician.[7] As detailed an explanation as possible should be given to the patient as to why the photos are being taken, as well as clarification as to how and where they will be used, stored and viewed, and by whom (e.g. for teaching and training medical colleagues). When written consent is being sought, the FFLM has produced a Photography Consent Form for these situations and PICS recommends the use of this publication.[8]

In the case of the incapacitated subject, in line with the Mental Capacity Act 2005,[9] the clinician will have to balance whether it is reasonable and in the public or individual's best interests to take a photo without consent[10] and whether other options, e.g. waiting until capacity has been regained, would be a better alternative. For instance, in the case of a sedated patient on ITU who appears to have sustained life-threatening injuries, or an intoxicated patient who has been assaulted, failure to take photographs could be seen as unreasonable on the part of the clinician and not in either the individual's or public's best interests. It is worth remembering that delays in documentation will also result in a changing appearance of the injuries.

When considering photography of children, the GMC offers guidance to the clinician, with a Gillick-competence-type approach to assessing the child's maturity, with consideration given to parental involvement:

'Children or young people under 16 who have the capacity and understanding to give consent for a recording may do so, but you should encourage them to involve their parents in the decision making. Where a child or young person is not able to understand the nature, purpose and possible consequences of the recording, you must get consent from a person with parental responsibility to make the recording.'[11]

If the clinician is faced with photo-documentation of intimate images, e.g. the breasts, genitalia or perianal area, additional precautions are required to ensure that inappropriate viewing of the images does not result. The FFLM issued joint guidance in 2014 with the Royal College of Paediatrics and Child Health (RCPCH) and the Association of Chief Police Officers (ACPO) with respect to intimate images.[12] The clinician should ensure informed consent is obtained from the complainant or the individual who holds parental responsibility (in the case of a child), though under 16s with capacity can consent alone. However, as with non-intimate images under, 16s should be encouraged to involve their parents whenever possible. The consent should outline that disclosure of the images to medical experts and the Courts may be required at a later stage. The document advised that the patient's face should not be included if intimate images are also taken and disclosure of such images will be discussed on page 14.

3.6 Chaperones and appropriate adults

There is a requirement for the doctor, under Section 47 of Good Medical Practice (2013) that *'You must treat patients as individuals and respect their dignity and privacy.'*[13] This concept extends to photography and to the need for a chaperone during photo-documentation. If a chaperone may be required, it is good practice to ask before the patient is seen, to prevent any awkwardness when sitting with the patient whilst a suitable chaperone is found. In 2013, the GMC published specific guidance on intimate examinations and on the requirement and role of chaperones[14]. Although it could be argued that most of this guidance is common sense, it should be adhered to in order to protect the patient and clinician against allegations of impropriety. Simply assisting a patient to undress may be misconstrued if informed consent has not been given and could then prove disastrous for the doctor's career and reputation. The details of the chaperone's name and role should be documented in the patient's notes.

The requirement for appropriate adults in custody is established in England and Wales in the Police and Criminal Evidence Act (PACE) 1984.[15] If an appropriate adult (AA) is required for an under-18 or for a vulnerable adult, the AA should ideally be present during the photography, though discretion should be used to prevent embarrassment to the patient, e.g. asking the AA to turn his or her back if the patient has to undress for the photography.

3.7 File formats

Images are stored in different formats. In the 2007 Home Office/ACPO publication *Digital Imaging Procedure, Version 2.1*, Cohen and MacLennan-Brown stated that

'...the format is not relevant to the admission of the evidence, only that the quality is fit for purpose.'[16]

Formats are rapidly changing entities and this makes insistence on one particular file format over another impractical. The maximum information is stored with the RAW format but, as RAW is manufacturer-specific, it may therefore not be supported by certain cameras and could present difficulties when attempting to access the images. This will be particularly apparent if the person who receives the images does not possess the technical knowledge to download the appropriate software for images to be viewed. The RAW format will also consume more memory in storage media.

The commonest format is the JPEG (Joint Photographic Experts Group). Although this has the distinct advantage of being readable by most viewing software, it has the disadvantage that the data is compressed to varying degrees and will therefore possess less data than when it was originally processed. In addition, the JPEG image can corrupt with repeated usage (e.g. opening and closing the images hundreds of times) and this will result in irreversible erosion of the image. Some cameras will allow different JPEG compressions, e.g. JPEG Fine, JPEG Large, JPEG Small. In this scenario, the best quality option should be the preferred choice. Double storage of images in RAW and JPEG should be considered with those cameras that offer this feature, i.e. for every image that is taken, the camera will store the image in both the RAW and JPEG formats.

3.8 Correct sequence: history, examination or photography?

Prior to taking the photos, the clinician should decide the best order in which to proceed. In the vast majority of cases, it should be possible to take a history, perform an appropriate examination and then progress to photography of the injuries with fully informed consent. By conducting the history and examination first, the clinician can determine which parts of the body require photography.

Occasionally, this order of events may have to be modified depending upon clinical urgency. Indeed, if clinical priority dictates, e.g. if urgent hospital transfer is required, there may not be an opportunity to photograph the patient, as his or her welfare remains the priority. In each individual case, it is therefore a judgement call by the clinician as to which order the assessment is conducted.

4. Considerations during Photography

4.1 Head Shots/ID Shots

Many forensic photographers are keen for a series of photos to begin (and possibly end) with a 'head shot', i.e. a photo of the subject's head and shoulders which will help to match the injuries with that particular patient. From a purely forensic perspective, this is an acceptable and totally understandable approach as it strengthens the audit trail. It could also be argued that a head shot personalises the injuries, by showing that the injuries belong to a specific patient. However, it may not be appropriate in certain situations, for instance, when documenting intimate images or when dealing with patients who dislike having facial photos taken. PICS therefore recommends that the need for a head shot should be discussed on a case-by-case basis with the patient. If this is not possible due to the patient's lack of capacity, the clinician has to make a decision, based on best interests, public interests and professional guidelines, as to whether a head shot is suitable for that particular set of images.

One common practice in SARCs is to take a photo of an 'identifier card' of the patient's details e.g. initials, DOB, date, time and location of assessment, etc. to help allow identification of the patient without the need to show the individual's face. A similar ID photo can be taken at the end of the photography, to allow the photos to be enclosed within the ID shots. This technique allows for photography in a near-anonymised fashion, but relies on accurate documentation of the details on the identifier card.

4.2 Composition

The clinician should be confident about asking the patient to move himself or herself into a particular position. Asking a patient to turn his or her head to the left to photograph the right side of the face is not an unreasonable request and may make all the difference to the quality of the resulting images. If the patient is uncooperative, it is worth reminding them that the photos will be less than ideal unless they are prepared to co-operate with these requests. The camera should be held perpendicular to the wound so that the light enters the camera at 90°.[17] This will reduce 'angular distortion' caused by viewing the injury from an acute angle (Fig. 6). The object of interest should be positioned as centrally as possible within the frame. Centralising the injury may not be possible on the initial 'location shot' (see page 10 under 'Three Photo Principle') where other anatomical landmarks may be required to help with orientation.

If asked to comment on such photographs, e.g. in expert work, PICS advises the clinician to consider that sub-optimal photos will result in sub-standard opinions. Failing to comment on a patient's photograph may be devastating from the patient's perspective, but a clinician could damage his or her reputation by best-guessing a poor quality image, e.g. from a patient's personal phone. This approach tallies with the GMC's advice in its 2013 publication *Acting as a witness in legal proceedings* which states that

'If you do not have enough information on which to reach a conclusion on a particular point, or if your opinion is qualified (for example, as a result of conflicting evidence), you must make this clear.'[18]

and

'If you are asked to give an opinion about a person without the opportunity to consult with or examine them, you should explain any limits this may place on your opinion. You should be able to justify the decision to provide your opinion.'[19]

In such circumstances, it may be appropriate to request that the photography be repeated by someone suitably qualified (although this may not be feasible depending on the nature of the injuries or the time that has elapsed) or the clinician should preface any opinion that is submitted by declaring that the photos are of poor quality.

Fig. 6 *Left hand photographed perpendicularly. Angular distortion of the same hand caused by the photograph being taken at an acute angle.*

4.3 Use of linear scales and three photo principle

Different forms of scale are available, including straight rules, L-shaped rules (Odontology scales), disposable, flexible and rigid (Fig. 7). The anatomy of the area may have a bearing on which scale might be used. For instance, it is very difficult to place a rigid L-square next to an injury on the side of the upper nose as facial structures can be a hindrance. Disposable scales may have an adhesive surface, but can be unpredictable, especially with hirsute or moist skin.

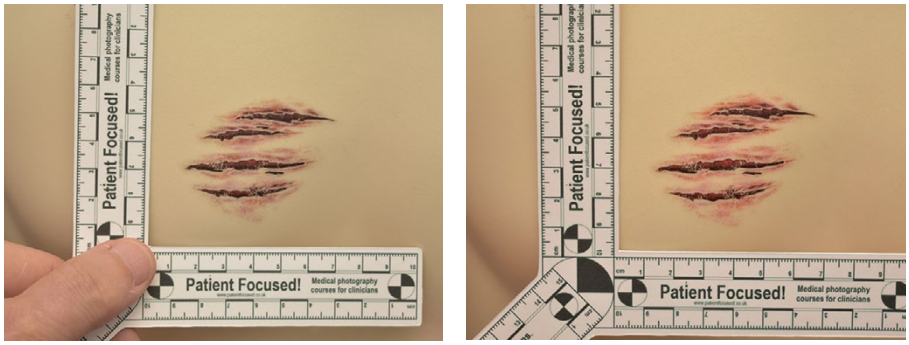


Fig. 7 *Y-shaped scales allow the photographer to keep his hands out of the image*

In general terms, each area of concern should have at least three photographs taken.

Firstly, an overview or location ('context') shot should be taken to allow the observer to orientate himself to appreciate which part of the body is being considered. This should include important local anatomical landmarks, wherever possible. The rationale behind this is that different parts of the body can look very similar in close-up (Fig. 8) and could easily lead to confusion at a later stage. Surrounding anatomy and landmarks help to explain the location of the injury.

Fig. 8 *The left side photo may appear to be 'Breasts or buttocks' but is actually the anterior right axilla.*

Secondly, a close-up photo should be taken, by either physically moving closer to the patient, allowing the injury to be seen in greater detail, or by using the zoom lens on the camera. As many patients in the custody and SARC environments are unpredictable, invading their personal space by moving closer to them may be intimidating for clinician and patient alike, and could antagonise a situation. A zoom lens may therefore be preferable as it will allow the frame to be filled without occupying their personal space.

Thirdly, the close-up photo should be taken with a linear scale adjacent to the wound, with local anatomical landmarks being visible whenever possible. This is therefore the same as the second photo, but with a linear scale in situ. The photographer's fingers should preferably be avoided as they can detract from the main subject of the photo. As per Fig. 7a, attaching a 'handle' to a linear scale can allow the photo to be taken without the photographer's fingers appearing in the photo.

Fig. 9 *Three photo principle.*

1) Overview *2) Near shot* *3) Near shot/linear scales*

Some clinicians prefer to photograph the area with the scales in-situ before taking the photograph without the scales: the scales can be removed quickly to allow the scale-free area to be photographed with minimal movement of the patient. If adopting this approach and using a flashlight, the clinician should ensure that the flash has fully re-charged between photos, otherwise the scale-free photo will appear darker.

The scales should be as flush with the skin as possible, but should not distort the skin. If the scale is too close to the camera and too far from the subject, the body and injury will appear smaller than they actually are (Fig. 10).

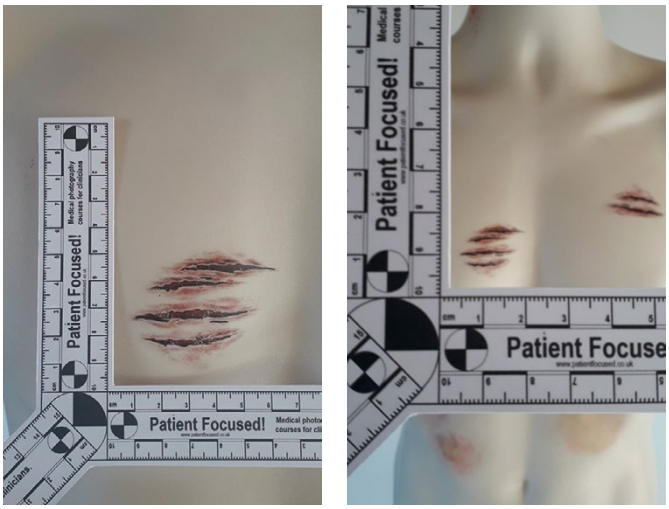


Fig. 10 *Keep scales as close to the skin as possible, otherwise body and injury will appear smaller.*

Most injuries will have a natural length and width which lend themselves to the appropriate alignment of the scales. Ideally, the scale should be aligned so that the length of the rule highlights the maximum length of the injury (Fig 11), though this may not be possible with irregularly-shaped injuries.

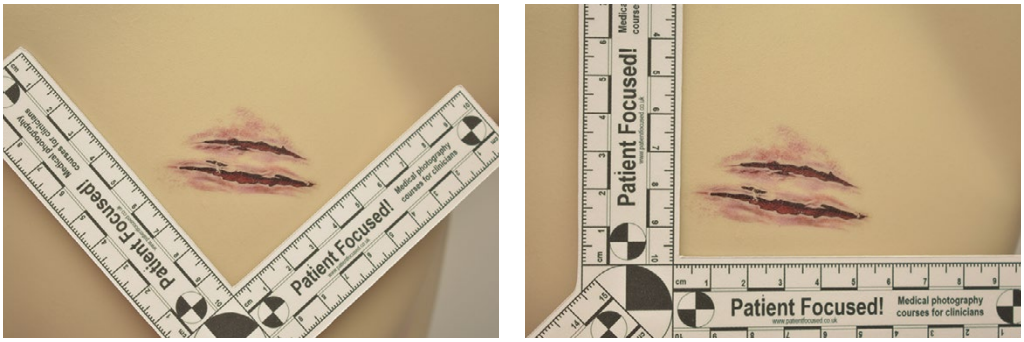


Fig. 11 *The scales should be aligned to the 'best fit' of length and width (as per the second photo).*

The scales should not occlude the injury (Fig. 12), to avoid 'injury cut-off.' Important local anatomical landmarks should also be respected: if occluded, orientation and interpretation of injuries may be more difficult. The scales should be disinfected with antiseptic after use unless disposable scales are being used.

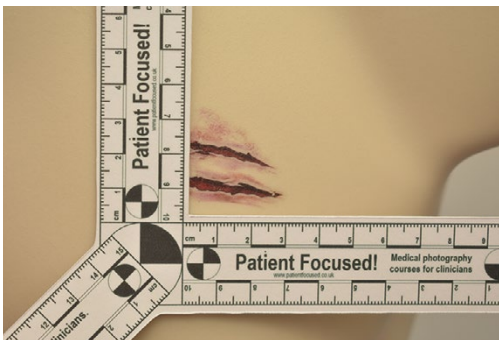


Fig. 12 *Injury cut-off*

4.4 'Before and after' photos

The importance of fully exposing a wound, e.g. by removing clothing, clipping back hair, or clearing away dirt, make-up or blood, cannot be overstated. Quite simply, the wound cannot be assessed properly unless it can be fully seen. If a patient has to tug at clothing to demonstrate an injury, it is best to remove the clothing and inspect the area properly. (Fig. 13)

Fig. 13 *Expose the area properly by removing clothing, not just tugging at it.*

Whenever possible, the clinician should strive to take before and after photos of the injury. Asking the patient to clean the wound himself will prevent accusations of the clinician being heavy-handed. Tap water, moist wipes or antiseptics should be used to best clean the wound. (NB: it is important that the wound is not cleaned until it is confirmed that swabbing of the area is NOT required as part of the police investigation. Blood distribution, spatter analysis and establishing whose blood is present may form part of the CSI investigation. CSI should therefore be contacted to ensure that such analyses are not required).

After the wound and surrounding skin have been washed, they should be dabbed dry (rather than rubbed) to reduce the risk of re-bleeding. Dry skin is also preferable to wet skin as there is less reflection glare in the images. A small amount of blood can go a long way so that an apparently large amount of blood may be obscuring a tiny wound.

Before and after photographs also help confirm that a standard and duty of care have been respected, offering the clinician a degree of protection if faced with criticism in the quality of clinical care provided.

When dealing with dirty or bloody cases, the clinician should wear gloves. He or she may need to change gloves during the assessment as blood and dirt are easily transferred onto the camera and this is obviously undesirable. Gloved hands can make for more difficult control of the camera as pressing the buttons can become problematic: the clinician should therefore be familiar with handling a camera whilst wearing gloves.

Fig. 14 *Before and after pictures can give a completely different perspective on an injury's appearance.*

4.5 Checking your photos

It is essential to check the photos as they are being taken as it is easy to experience camera shake, subject movement, flash reflection, over or under-exposure, or injury 'cut-off.' The photos should be repeated as required, though bad photos should not be deleted in forensic cases:[20, 21] they are part of the medical documentation and questions could be asked at a later stage if sections of such documentation are missing. The photos should be regarded in the same manner as any other part of the medical notes and must not be erased. If there are any concerns that the photographs are in some way not fully representative of the injury, these considerations should also be documented in the notes, e.g. 'the patient refused to keep still'.

4.6 Photographing negative findings, incidental findings and interesting features

Not infrequently, we encounter patients who have something of clinical interest, even though this may not be directly related to their existing management. (Fig. 15) The clinician should be confident in asking if this can be photographed for medical interest: invariably, the patient will agree as they have something of medical significance.

Fig. 15 *Photographing negative or incidental findings as well as interesting features should always be considered (Traumatic mydriasis of right pupil)*

Furthermore, it is also relatively common to find that there are no apparent injuries, or the injuries are not consistent with the history being offered. It may therefore be appropriate to document negative, pre-existing and inconsistent findings as they may be significant at a later stage. (Fig. 16) The clinician should also consider that an injury may be invisible at the time of examination but could emerge over subsequent days: therefore, the clinician may need to re-assess and re-photograph the patient at a later stage.

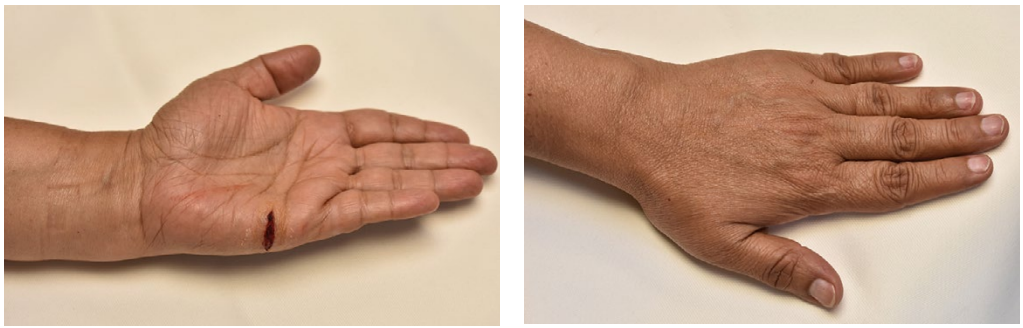


Fig. 16 *Incised wound to ulnar aspect of left hand, but also demonstrating that there are no injuries to the dorsum of the left hand.*

5. Considerations after photography

5.1 Enhancement (cropping, brightness, contrast)

At any point, there should be a Master Copy and a Working Copy (or back-up) of all images. Any alterations to images should be on a **copy** of the Working Copy: that way, if the alterations prove to be disastrous, the Master and Working copies are still intact. Minor corrections are considered acceptable, e.g. lightening or cropping of images, provided that such alterations can be explained, are appropriate and can be of assistance to the Court process. If not, the clinician may be accused of manipulating the image and trying to mislead. Cropping has the distinct disadvantage of reducing pixel count and this could prove problematic if enlargement of the image is required later. There is therefore a strong argument for the clinician to tread carefully and leave all images intact, with any enhancements being undertaken by specialists working within a forensic photography unit.[22]

If enhancement is undertaken by the clinician, the enhanced copy of the Working Copy image should be allocated a corresponding file name. When submitting, an unaltered copy of the Working Copy should also be submitted for comparison with the enhanced image.

5.2 Storage of images

Internal memory space for storing images is usually limited with digital cameras, so most digital cameras store onto a removable and reusable Secure Digital (SD) card, with memory storage typically between 2GB and 64GB. Data from the SD Card then has to be transferred to a separate medium for long-term storage.

The Floppy Disc, with its very limited 1.44MB capacity, has come and gone, having largely been surpassed by the Compact Disc and Digital Versatile Disc (CD and DVD). However, by technological standards, the CD is now reclining into middle age with many modern laptops choosing not to feature a CD-DVD drive. The timeframe between 'novel' and 'obsolete' is short. USB memory sticks offer convenience with great storage potential but run the risk of being mislaid due to their compact size. Printed photographs are at danger of fading with time, and paper body diagrams may be convenient but are simplistic and are often completed by clinicians with limited artistic abilities.

In Nov 2007, Cohen and McLennan-Brown recommended in the Home Office/ ACPO publication on *Digital Imaging Procedure* that '*all the files need to be transferred to new media regularly, possibly as often as every five years, or transferred to professionally managed data management archive systems.*' [23]

Whether such advice has been heeded is arguable, but the guidance illustrates the need to be vigilant on emerging technologies. The correct storage of data is probably one of the main concerns facing the clinician. Indeed, a 2016 study[24] by PICS of SARC Managers in the UK highlighted that storage and retrieval of images were among the main anxieties when dealing with patients. Problems that have arisen include forgotten passwords, lack of encryption, inability to retrieve images from a hard drive and being unable to play DVDs of documented injuries.

The GMC is clear that medical photos of patients should be regarded as part of the patient's medical notes. Their storage should therefore be given the same level of importance as is conferred upon other medical records, both paper and electronic. Legal requirements should be welcomed as they protect both the patient and the clinician by ensuring that all data is handled securely and professionally. However, the danger of over-zealous and inappropriate (but well-intended) regulation must also be discouraged as such restrictions will hinder the numerous benefits that modern technology can bring to clinical practice. With clinical software and hardware varying so greatly across the UK, it is therefore advisable to recommend general principles, rather than specifics.

The current front runners in the world of storage media are possibly Cloud and hard drives, but these media have not stood the test of time and questions remain over their security. Indeed, 'total security' is arguably impossible, as even the most seemingly secure systems can be hacked, or compromised by human error. The danger of increasing dependence on one system was highlighted in May 2017 with the WannaCry ransomware attack, where over 300,000 computers worldwide were affected by a cryptoworm emanating from North Korea. Widespread disruption to NHS clinics, operations, GP appointments and access to patients' records resulted from exploiting defects in outdated software.[25] Despite this major disruption, NHS Digital, NHS England, DHSC and NHS Improvement announced in January 2018 that

'*NHS and social care organisations can safely put health and care data, including non-personal data and confidential patient information, into the public cloud.*'[26 Para 6]

This document stipulated that all NHS Cloud storage should be within the EEA (European Economic Area) or USA. However, they then offered the seemingly contradictory advice that

'If your internet access is disrupted or is unreliable, you may lose access to your data and services' [26 Para 12]

The storage of images should be in line with local data protection policies, which should themselves be in keeping with national guidelines and statutory requirements outlined in the General Data Protection Regulation (EU) 2016/679 (GDPR), introduced in May 2018.[27] This Europe-wide piece of legislation tightened existing data protection law by placing greater requirements on controlling and processing personal data, with stiffer penalties for breaches in data protection: depending on the nature of the breach, the organisation can be fined up to 20M Euro or up to 4% of worldwide turnover, whichever is the greater. Supervisory bodies such as the GMC and medical defence organisations amended their own policies and advice to members to comply with the introduction of GDPR. The GDPR requires that personal data is processed lawfully, fairly and in a transparent manner; that it is only collected for specified, explicit and legitimate purposes; that it is adequate, relevant and limited to what is necessary; that it must be accurate and up-to-date and kept in a form which permits identification for no longer than is necessary/archiving; that suitable technical and organisational measures should be in place to ensure security of personal data. The organisation should hold a 'Privacy Notice' that is readily available for inspection and that should outline how the principles of GDPR are being enforced.

Prior to introducing a medical photography service, if local policies do not exist, it is important that existing strategies are appropriately modified or new ones created to cover the management of photography. Discussion with the local Caldicott Guardian, Information Governance Manager, SIRO (Senior Information Risk Owner), NHS Commissioners and Medical Defence Organisations would be advisable to ensure compliance with NHS Digital recommendations, as well as legal and ethical duties.

Secure storage of images should be in a password-protected medium such as a hard drive, non-rewritable CD (CD-R) or DVD (DVD-R) or secure Cloud system. The initial images should be designated as 'Master Copy' and should remain unaltered. A copy of the Master Copy should be made as soon as possible and should be designated as the 'Working Copy'. Electronic files and discs should be marked with the patient's reference number rather than the patient's name. Any CDs and DVDs should be labelled with an indelible marker.

Any dealings with the images should be via **copies** of the Working Copy and not the original Working Copy or Master Copy. The data should be accessible on a need to know basis and an audit trail of access should be available (e.g. to the Courts or for regulatory inspection) as and when required to ensure compliance with legal requirements and local policies.

Every photograph taken by the camera will generate its own individual image number. It is good practice to document in the medical notes the first and last image numbers for that particular patient (e.g. '0235 – 0240') as this will also help to identify which images belong to which patients. This may be of particular relevance when several patients are photographed in a short period of time, where there is an increased risk of confusing which injuries belong to which patient.

One area of confusion relates to the duration of retention of medical photographs in the custody and SARC setting. The NHS has offered guidance in its *Records Management Code of Practice for Health and Social Care 2016*[27b] and also in the two updated NHS documents *Corporate Records Retention and Disposal Schedule (2019)*[27c]

However, none of these documents makes specific reference to medical photographs stored in relation to police custody, forensic or sexual assault cases. At the time of writing (Dec 2019), '*the Independent Inquiry into Child Sexual Abuse (IICSA) and the Infected Blood Inquiry (IBI) have requested that large parts of the Health and Social Care sector do not destroy any records that are, or may fall into, the remit of their Inquiries. In response to this, a blanket hold on the disposal of all records has been implemented across NHS England and NHS Improvement.*' [27c Section 1.5]

With such uncertainty and in view of the large numbers of historic cases that are coming to light, PICS recommends that medical photographs taken for custody and SARC cases should be stored indefinitely, until there is specific clarification in this regard. There is reassurance from case law (R v Northumberland County Council and the Information Commissioner)[27d] which highlights the legitimacy of altering storage procedures provided there is a well-reasoned case for doing so.

5.3 Submission of images

Most commonly, the reason for the Custody/SARC clinician to submit images is with a Court statement, where the clinician is either acting as a professional witness of fact or as an expert witness. The clinician's duty is to the Court. The patient should have given consent at the initial discussion when the photos were being considered, although the court may order disclosure without the patient's consent. In its 2017 publication *Confidentiality: good practice in handling patient information*, the GMC clarifies that the clinician is protected in these circumstances:

'You should tell patients about disclosures you make that they would not reasonably expect, or check they have received information about such disclosures, unless that is not practicable or would undermine the purpose of the disclosure – for example, by prejudicing the prevention or detection of serious crime.' [28]

and

'*You must not disclose personal information to a third party such as a solicitor, police officer or officer of a court without the patient's explicit consent, unless it is required by law, or ordered by a court, or can be justified in the public interest. You may disclose information without consent to your own legal adviser to get their advice.*'[29]

If forwarded on disc, the images should be submitted as a copy of the Working Copy on a non-rewritable CD/DVD, with the disc being given an exhibit number that is documented in the statement. Best practice would also dictate that printed copies of the images using photographic paper should be submitted in tandem with electronic images, with the printed images also being awarded a separate exhibit number. The costings for such printing should be determined locally. The statement should also describe the make and model of camera that was used and detail that it was used specifically for documentation of injuries. If the locally-agreed policy allows for images to be forwarded by e-mail, the security of the email systems should be determined beforehand. Two email systems may be individually 'secure' but not 'secure' between each other. For instance, the Criminal Justice email system '.cjsm.net' is secure with '.nhs.net' but not '.nhs.uk'.[30] Additional consideration should also be given to encryption and data limits as the email servers may not permit sufficient data transfer to allow the images to be sent electronically.

The duty of confidentiality continues after death and disclosure of information relating to deceased patients is outlined by the GMC. Requests by the Coroner, Procurator Fiscal, Director of Public Prosecutions (DPP) or other legal authority, public enquiries and National Confidential Inquiries are examples of where submission of images may be entirely appropriate after the patient's death.[31]

Specific consideration should also be given to the submission of intimate images. Guidance in this area was offered by a joint FFLM/RCPCH/ACPO publication (2014)[12] which considered 'intimate' to refer to the breast, genital or anal areas, with the recommendation that the doctor should disclose in the medical statement whether intimate images had been taken. However, the images should not be attached to the statement and should only be disclosed if there is a specific request from the Court or appropriate informed consent has been provided by the patient: until such a request is made, line drawings should be submitted with the statement. In the event of uncertainty as to whether one or more images should be disclosed, discussion with the clinician's medical defence organisation would be advisable.

When presenting images at a public forum, such as a medical meeting, the clinician should not present images that allow the patient to be identified. Cropping of images may be appropriate to prevent such identification and the clinician should advise the audience that photographing of slides is not permissible.

6. Training and qualifications

PICS recommends that clinicians undertake an accredited course in clinical photography, as this will ensure higher standards in photography of patients, reduce the likelihood of medico-legal issues and protect the clinician against accusations of poor practice. Consideration should also be given to refresher training to cover changes in technology and relevant legislation and guidelines.

7. Discussion and conclusions

Photo-documentation of injuries by clinicians is something that should be welcomed. Clinical knowledge combined with correct training in the use of modern cameras will serve the public and criminal justice systems well. Provided the clinician is well-versed in the technical aspects of photography and the legal and ethical duties that may present, the clinician should be able to proceed with accurate documentation of injuries without any fear of breaching legal, ethical or regulatory concerns.

There is a learning curve to acquiring the skills of clinical photography but this is a skill-set that is well within the capabilities of the well-motivated individual who is keen to apply his or her clinical skills and experience to the world of photography.

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