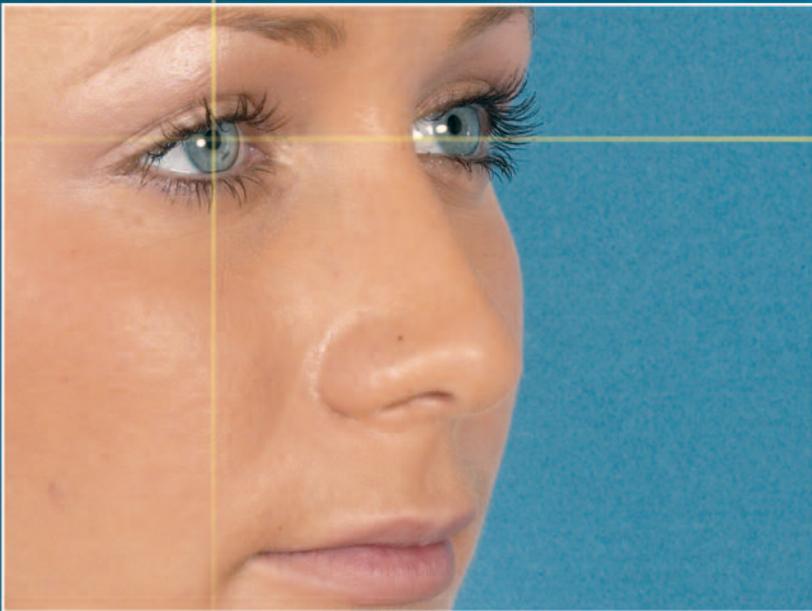


Photographic Standards in Plastic Surgery



The standard photographic views illustrated in this card were established by the Plastic Surgery Educational Foundation. We feel these poses best document the pertinent anatomy of the patient without distortion or distraction.

Standardized photography ensures that comparisons of pre-op and post-op images will yield meaningful observations. All clinical photographs should be taken using the same equipment and procedures. Camera, lighting, magnification, framing, patient positioning and patient preparation all need to be consistent.

Referencing the images and information in this card during patient photography should help any plastic surgery practice to capture consistent pre- and post-op images. When capturing post-operative photos, it is a good idea to have the patient's pre-op images on hand as well.



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using this photographic standards chart

camera-to-patient distance

One of the goals of standardized photography is to maintain consistent magnification from photo to photo. For a given camera system, this may be achieved by controlling the distance from camera to patient. However, the distance required for a particular magnification is not the same for all camera systems—it is affected by the size of the imaging sensor and the focal length of the lens.

Each series of images in this chart lists a target area size and a 35mm reproduction ratio. The camera-to-patient distance will need to be filled in for the imaging system being used. This may be accomplished as follows:

- 1 On a wall or other flat, stationary surface, place tape marks that describe the target area. To calibrate for a 1:10 reproduction ratio, for example, tape a box that is 36cm x 24cm.
- 2 Make sure the correct lens is mounted to the camera. If a zoom lens is being used, make sure it is set to the proper focal length. (Note: Always use the same focal length for a particular view.)
- 3 Holding the camera at the same height as the tape marks and looking through the camera's viewfinder, determine the distance from the wall at which the tape marks are in sharp focus and positioned at the edges of the image area.
- 4 Measure the distance from the camera to the wall and record it in the appropriate location on this chart.
- 5 If you are using an indexable manual-focus lens, mark the setting on the focus ring.

color coding

Each target area listed in this chart is marked with a corresponding color. Using these same colors for indexing the camera lens and marking camera-to-patient distances on the floor will greatly simplify standardized photography.

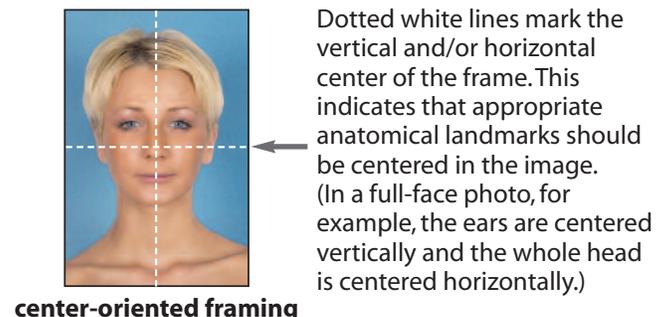
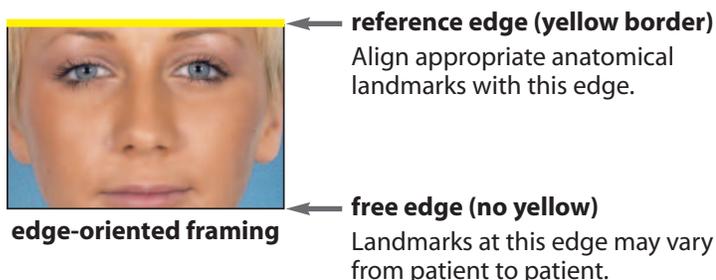
framing

The images in this chart are marked with gridlines to assist in proper framing. These gridlines correspond to the descriptive text found under the "Framing" section for each photo series. The proper use of these guides will allow for consistent framing and magnification across patients of varying sizes.

Wherever a yellow line appears at one edge of an image, the photo should be framed by placing the

appropriate anatomical landmark against that edge. Since magnification is kept constant for all patients, the landmarks found at the opposite edge of the frame may vary.

When an image is meant to be framed by positioning an anatomical landmark in the center of the frame (or one-quarter of the way from the edge), this is indicated by a dotted white line on the image.

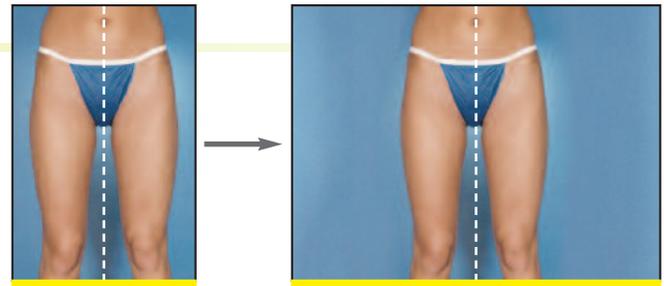


aspect ratios

The images in this photo standard all have an aspect ratio of 2-by-3 (i.e., they are two-thirds as wide as they are long). This is the aspect ratio of 35mm film and many digital cameras. In addition, each image is captured in either a vertical or a horizontal orientation in order to maximize the subject area relative to the background.

Depending on the specifics of the imaging system that is used, the aspect ratio may differ from that shown here. For example, video cameras and some digital cameras capture images in a 4-by-3 aspect ratio. Also, it is sometimes impractical and/or undesirable to capture images in both vertical and horizontal orientations.

For an aspect ratio other than 2-by-3, it is necessary to determine new target areas that capture the same



2-by-3 vertical

4-by-3 horizontal

information. Once this is done, the framing notes and gridlines may be used in the normal manner. For example, the 2-by-3 target area for hips/thighs is 42cm x 63cm (vertical). For a video camera (4-by-3 horizontal aspect ratio), an appropriate target area would be 84cm x 63cm. This captures the same clinical information (63cm from the knees up) but extends the background on either side.

positioning the patient and camera

If clinical photos are to provide an accurate record of pre- and post-operative patient appearances, the relative positions of patient and camera must be kept constant. This is best accomplished through the use of strategically placed tape marks on the floor and walls of the photo studio or exam room.

The diagram below shows an overhead view of a suitable tape mark pattern. A 30cm octagon with radiating lines is used for positioning the patient. One line is extended out along the camera axis and marked at appropriate distances.

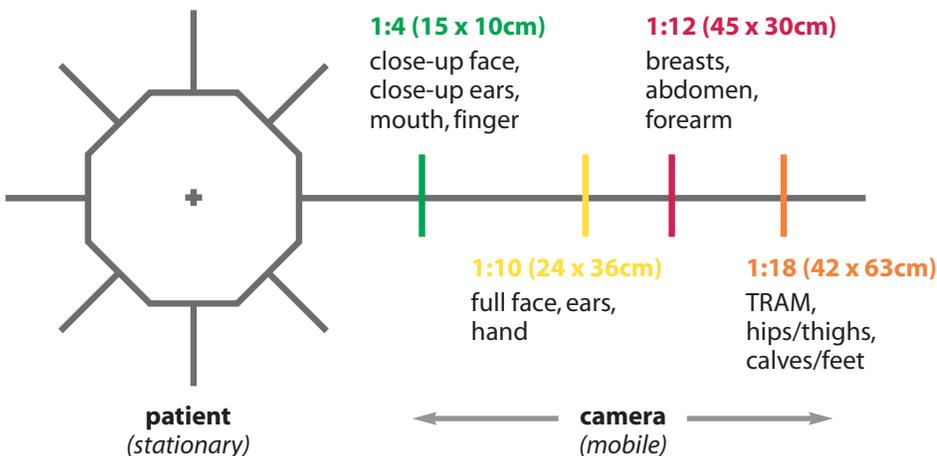
For body photographs, the patient stands with the outsides of the feet along opposite edges of the octa-

gon. (The spacing of the feet helps create separation between the inner thighs.)

For facial photos, the patient sits on an adjustable height stool (with no back) placed over the center mark. With the stool adjusted to a comfortable height, the patient sits up straight with feet on either side of the appropriate radiating line. For a front view, the patient looks directly into the camera lens. For lateral or oblique views, the patient looks at a tape mark placed on the wall.

Holding the camera, the photographer sits, stands or kneels at one of the positions marked along the camera axis. For greater stability, the camera may be mounted to a tripod placed over the appropriate tape mark. Camera height is adjusted to match the height of the target area, with the lens barrel always parallel to the floor. It is important not to tilt the camera up or down when framing an image.

Camera stands are available that allow the camera to be moved up and down, forward and back, or left and right without tilting or swiveling. Such a stand greatly simplifies proper camera positioning.



close-up face

Target Area: 15x10cm (horizontal) ■

Reproduction Ratio: 1:4

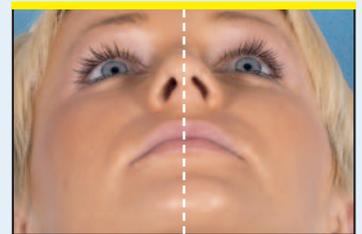
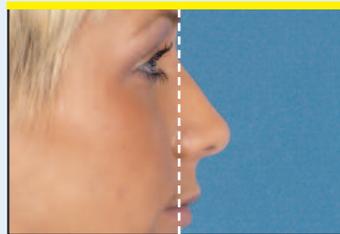
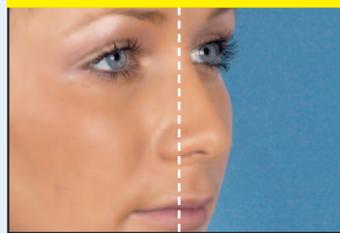
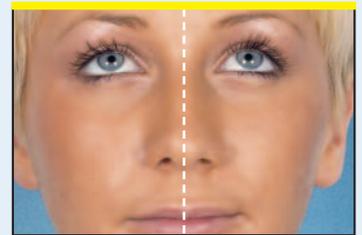
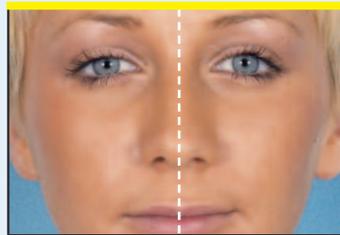
Camera-to-Patient Distance: _____

Patient Preparation: Pull hair off face and behind ears (use black headband or small clips that hold hair without pulling), remove jewelry and eyeglasses, remove heavy makeup, cover shirt collar with black drape.

Patient Positioning: Seat patient on a stool adjusted to a comfortable height and placed at the center of a tape mark pattern. Patient should sit up straight with feet on either side of the appropriate tape mark. When turning for oblique and lateral views, patient should rotate entire body (shoulders and feet).

Framing: Place eyebrows (or proximal eyebrow) at top of frame. Center nose horizontally in all views.

Special Notes: For basal view, tip of nose should be aligned with upper eyelid crease.



full face

Target Area: 24x36cm (vertical) ■

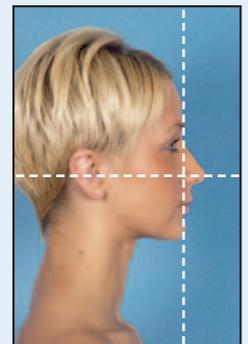
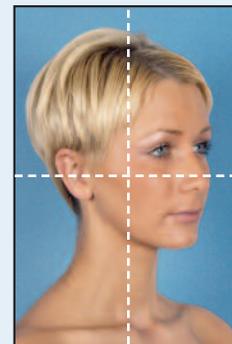
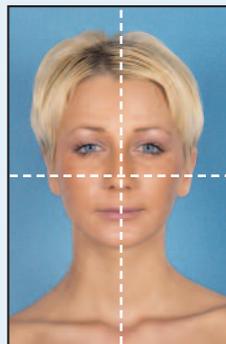
Reproduction Ratio: 1:10

Camera-to-Patient Distance: _____

Patient Preparation: Same as close-up face (see above)

Patient Positioning: Same as close-up face (see above)

Framing: Center ears vertically in all views. For frontal and oblique views, center entire head horizontally. For lateral views, place front of face 1/4 frame from edge.



ears

Target Area: 24x36cm (vertical) ■ / 10x15cm (vertical) ■

Reproduction Ratio: 1:10 / 1:4

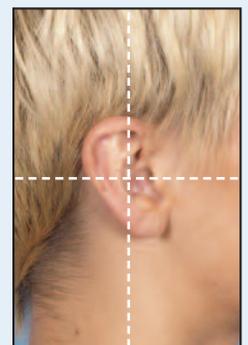
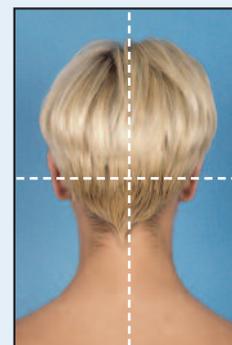
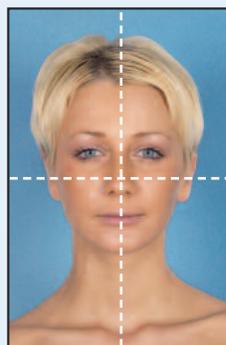
Camera-to-Patient Distance: _____

Patient Preparation: Same as close-up face (see above)

Patient Positioning: Same as close-up face (see above)

Framing: Anterior and posterior views same as full face (see above). For close-up, center ear in frame.

Special Notes: Make sure hair is off of ears in all views.



mouth

Target Area: 15x10cm (horizontal) ■

Reproduction Ratio: 1:4

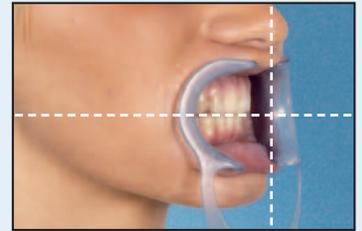
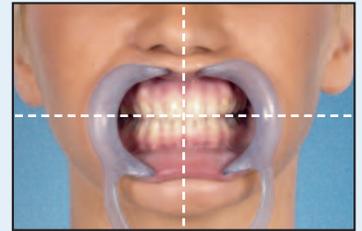
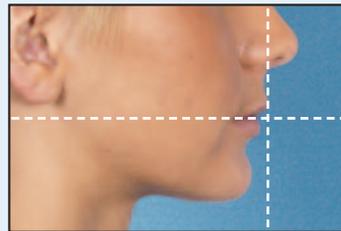
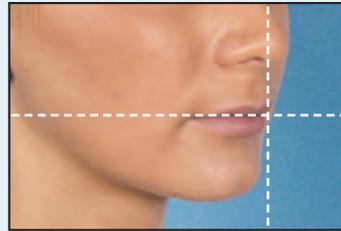
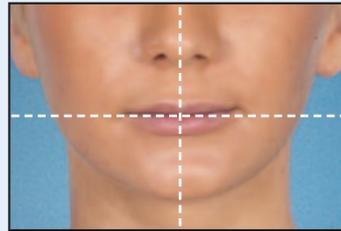
Camera-to-Patient Distance: _____

Patient Preparation: Pull hair off face and behind ears, remove lipstick and other makeup, remove any distracting jewelry, cover shirt collar with black drape.

Patient Positioning: Seat patient on a stool adjusted to a comfortable height and placed at the center of a tape mark pattern. Patient should sit up straight with feet on either side of the appropriate tape mark. When turning for oblique and lateral views, patient should rotate entire body (shoulders and feet).

Framing: Center mouth vertically in all views. In anterior views, center mouth horizontally. In oblique and lateral views, position lips 1/4 frame from edge.

Special Notes: For intraoral photographs, use flash heads positioned close to end of lens.



tram

Target Area: 42x63cm (vertical) ■

Reproduction Ratio: 1:18

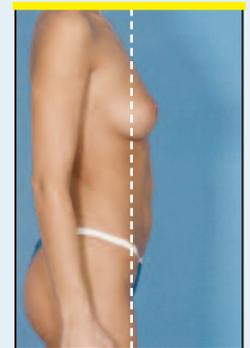
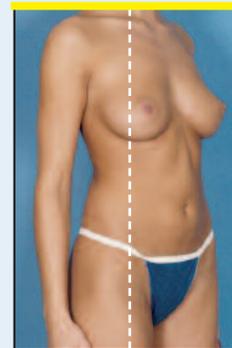
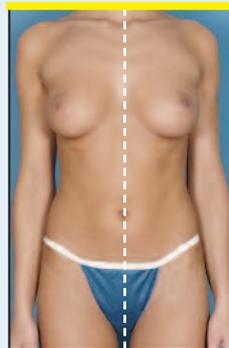
Camera-to-Patient Distance: _____

Patient Preparation: Remove any visible jewelry. Remove gown completely. Patient should wear a photo garment.

Patient Positioning: Patient standing comfortably erect with arms at sides. Feet should be aligned with appropriate tape marks on floor. For oblique views, distal arm should be moved back slightly.

Framing: Position clavicles at top of frame. For frontal and oblique views, center torso horizontally. For lateral views, center mass of proximal breast horizontally.

Special Notes: Distal breast should not be visible in lateral views.



breasts

Target Area: 45x30cm (horizontal) ■

Reproduction Ratio: 1:12

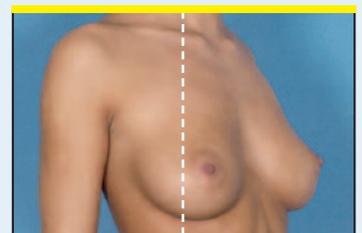
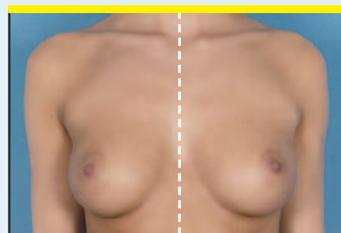
Camera-to-Patient Distance: _____

Patient Preparation: Patient disrobed above the waist. Remove any visible jewelry.

Patient Positioning: Same as TRAM (see above).

Framing: Position clavicles at top of frame. For frontal and oblique views, center torso horizontally. For lateral views, center mass of proximal breast horizontally.

Special Notes: Distal breast should not be visible in lateral views.



abdomen

Target Area: 45x30cm (horizontal) ■

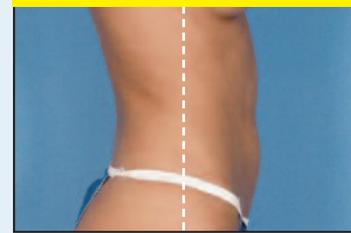
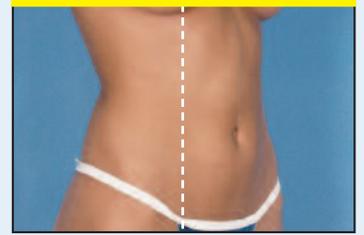
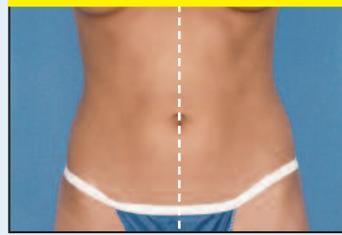
Reproduction Ratio: 1:12

Camera-to-Patient Distance: _____

Patient Preparation: Remove gown completely. Patient should wear a photo garment.

Patient Positioning: Patient standing comfortably erect with arms folded above breasts. Feet should be aligned with appropriate tape marks on floor.

Framing: Position inframammary fold at top of frame. Center torso horizontally.



hips/thighs

Target Area: 42x63cm (vertical) ■

Reproduction Ratio: 1:18

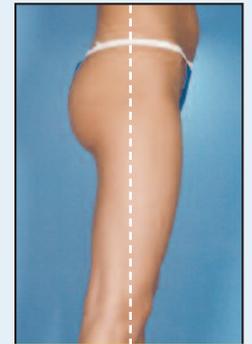
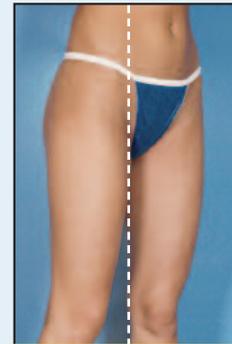
Camera-to-Patient Distance: _____

Patient Preparation: Remove gown completely. Patient should wear a photo garment.

Patient Positioning: Patient standing comfortably erect with arms folded above breasts. Feet should be at approximately shoulder width, aligned with appropriate tape marks on floor. (For larger patients, a wider stance may be required.)

Framing: Position knees at bottom of frame. Center hips horizontally.

Special Notes: Distal leg should not be visible in lateral views.



calves/feet

Target Area: 42x63cm (vertical) ■

Reproduction Ratio: 1:18

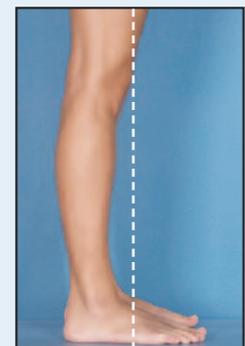
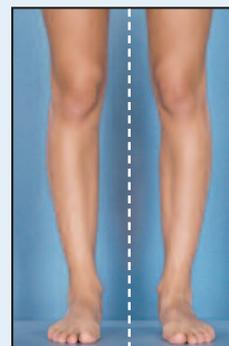
Camera-to-Patient Distance: _____

Patient Preparation: Patient disrobed below the waist. Remove any jewelry from ankles or toes. Remove nail polish.

Patient Positioning: Patient should stand on a step stage with feet at approximately shoulder width.

Framing: Position toes at bottom of frame. Center feet horizontally.

Special Notes: Distal leg should not be visible in lateral views.



forearm

Target Area: 45x30cm (horizontal) ■

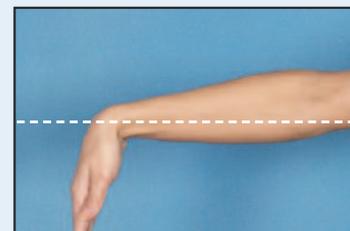
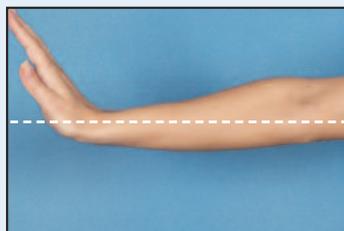
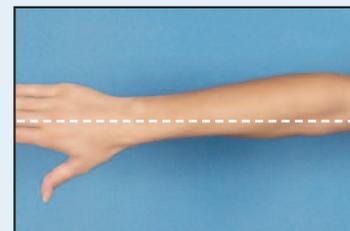
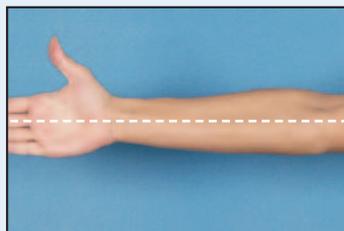
Reproduction Ratio: 1:12

Camera-to-Patient Distance: _____

Patient Preparation: Remove any jewelry from wrist or fingers.
Remove nail polish.

Patient Positioning: Seat patient on a stool adjusted to a comfortable height and placed next to a tape mark pattern. Patient should extend hand horizontally above tape marks that are perpendicular to camera axis (i.e., tape marks for lateral views).

Framing: Place elbow at edge of frame and center forearm vertically.



hand

Target Area: 36x24cm (horizontal) ■

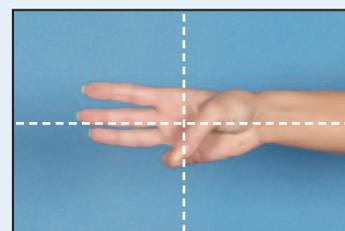
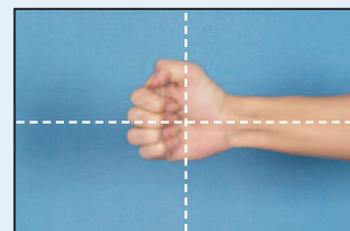
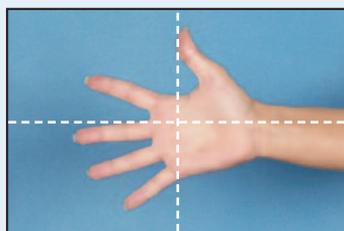
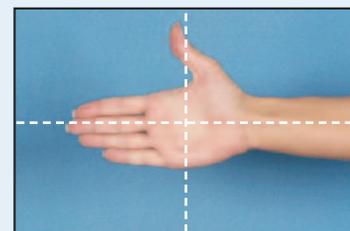
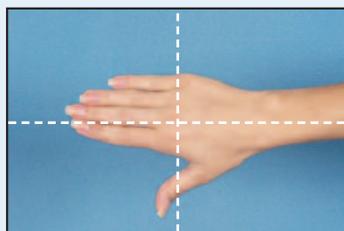
Reproduction Ratio: 1:10

Camera-to-Patient Distance: _____

Patient Preparation: Remove any jewelry from wrist or fingers.
Remove nail polish.

Patient Positioning: Seat patient on a stool adjusted to a comfortable height and placed next to a tape mark pattern. Patient should extend hand horizontally above tape marks that are perpendicular to camera axis (i.e., tape marks for lateral views).

Framing: Center hand in frame.



finger

Target Area: 15x10cm (horizontal) ■

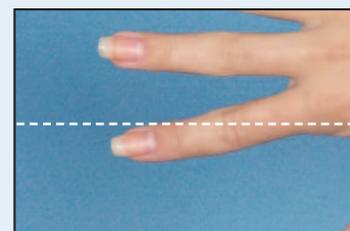
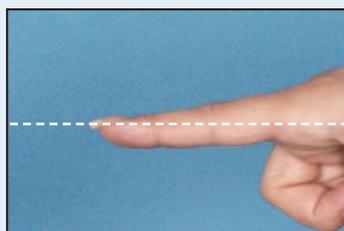
Reproduction Ratio: 1:4

Camera-to-Patient Distance: _____

Patient Preparation: Remove any jewelry from wrist or fingers.
Remove nail polish.

Patient Positioning: Same as hand (see above).

Framing: Place metacarpophalangeal joint at edge of frame.
Center finger vertically.



quick tips for clinical photography

Taking a clinical photograph is not the same as taking a snapshot.

A good clinical photograph should provide a maximum amount of pertinent medical information and a minimum of distraction.

To improve the quality of your patient photos, remember these simple rules:

✓ **use an appropriate backdrop**

Photograph patients against a solid-colored background. Light to medium blue is a good choice because it contrasts well with skin tones. Medium gray may also work well. Use a fabric drape or other non-reflective material.

✓ **remove distractions**

Jewelry and clothing create an unnecessary distraction in patient photos. They should be removed from the area of interest prior to photography. For body photos, it is advisable to use special modesty garments (available from medical supply dealers) instead of the patient's underwear.

✓ **use controlled lighting**

Patients should be photographed using a flash system or studio strobes (available room lighting is not appropriate). Balanced cross-lighting (i.e., two strobes positioned symmetrically on either side of the camera) brings out surface texture without creating shadows that are overly harsh.

✓ **reduce cast shadows**

The use of balanced lighting with diffusers can soften the shadows cast by the patient. To completely eliminate cast shadows, one or two additional lights may be aimed directly at the backdrop.

✓ **record settings**

As much as possible, the same camera settings should be used for every patient. For settings that must be adjusted from patient to patient (such as exposure compensation), all values should be recorded, stored with the photos and referenced during post-op photography.

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EDUCATIONAL FOUNDATION

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