

The Dermatologist's Guide to Effective Clinical Photography

10 Tips for Better Patient Care and Better Business

Photography has become essential to the practice of dermatology and aesthetic surgery. It provides a mechanism to improve patient care, enrich your documentation, aid in patient education/consultation, and allow you to set realistic expectations for your patients through the use of “before and after” images for cosmetic procedures.

Despite the power of great photography, most medical practitioners find it difficult to capture high quality images. Consistent lighting, as well as camera and subject placement is critical to taking the quality photos that can showcase your skills and expand your practice. We have compiled ten invaluable tips to help you and your office achieve the best photographic results possible.

1 Stand your ground.

Many photographers stand too close to their subjects, which may create distortion in the image. Additionally, at a short distance, the bright flash from most cameras will overexpose or “wash out” the center of the picture. It's much better to maintain a reasonable distance from the subject—typically around four feet or more—and use the camera's zoom feature to isolate the subject of the picture.

Maintain consistent distances

When taking before and after pictures, it is very important to maintain consistent distances from the subject. There are some easy techniques to help with this.

- Keep your camera on a tripod to keep your camera steady.
- Put marks on the floor where the tripod legs stand, as well as marks on the floor where the subject should stand—about two feet from the wall to minimize hard shadows on the wall.

If a tripod isn't a viable solution because of space restrictions, try one of the following techniques:

- Attach a piece of string to your camera the length of the distance between the camera and the subject. The string then acts as a convenient measuring device to ensure that the subject will stand the same distance from the camera each time. *(To avoid contamination, be careful not to touch the string to the subject.)*

- Put a mark on the floor where the photographer should stand. Try to keep the camera over this line to maintain the distance.

Photographing extreme close-ups

For extreme close-ups, special equipment is often required. The macro mode on a point-and-shoot camera, or a macro lens on a digital single lens reflex (DSLR) camera, will enable the proper focus when you are photographing at a distance of less than six inches.

- Set your camera or lens to macro. On many cameras, this is denoted by a small flower icon.
- Use a tripod. This is essential for taking extreme close-ups with the macro mode.
- Take some test photos to gain a better understanding of the lighting requirements.

2 Maintain perspective.

It's important to take all of your photographs from a consistent angle, or perspective. This ensures that you can make useful comparisons between images taken at different times.

Establish standard positions

Establishing a regular set of positions for photographing each part of the body will make it much easier to track the progress of a treatment. For example, facial photos should be taken with the patient's Frankfurt horizontal plane (i.e., the imaginary line from the external auditory canal to the infraorbital rim) parallel to the ground. For oblique facial views, you should align the tip of the nose with the edge

of the distal cheek. This will help your pre- and post-treatment images maintain consistency for successful comparisons.

Perspective is also important in non-clinical situations. The effects of laser and cosmetic treatments can be effectively documented with consistent patient positioning. To reliably duplicate patient positioning:

- Place or note small marks every 3-4 inches on the wall opposite where the patient will be standing to have their picture taken. The marks should generally range in height from just under five feet to just over six feet to accommodate all patients.
- Label the marks on the wall with colors, letters or numbers to correspond with patient height.
- Make sure your patients are photographed with their shoes off to remove height variations based on high heels or thick soles.
- Have your patients stand with their toes on the spot you've marked on the floor. Ask them to point their nose to the spot that corresponds to approximately four inches below their height. For example, if a 5'10" tall woman is standing to be photographed, she should point her nose at the spot at or about 5'6" high on the wall.

Note that asking the patient to look at the spot does not achieve the same result; consistency in positioning over multiple photographs comes from the patient pointing their nose at the spot. The color of the dot can be noted in her chart.

Positioning

There are five commonly used angles for most medical photographs: frontal, oblique (45° left and right), and lateral (90° left and right.) For each of these, position the same height markers on the opposite walls. Have the subject turn and point their nose to the spot that corresponds with their height. In this manner, you can maintain consistent positioning over multiple visits.

Camera Height

The height of the camera is important. An image taken from below someone's chin will look very different than one taken from six inches above them. Know the height on the tripod that corresponds to the mark on the wall and the height of the patient. Extend everything and make marks on the extension tube corresponding to the proper height. Finally, make multiple marks on the floor where the tripod belongs to enable you to position the tripod and quickly take the photographs of all angles. Be sure to add all of these settings to the patient's photographic record, so they are readily reproducible for each visit.

3 Let there be light.

Consistency in color is also important for good photography. While the color of your photographs can be influenced by a number of factors—the paint color on the walls, colors worn by a patient, the number of office windows, and the fluorescent lights on the ceiling—the single most important factor in achieving consistent color is to provide the exact same light each time you take a photograph.

While our eyes automatically adjust from light source to light source and balance out the color differences, cameras have a more difficult time doing this. They simply capture the color of the light that enters the lens.

When film cameras were very popular, people would buy “indoor film” and “outdoor film,” which would compensate for the color changes in the light. Today, on digital cameras, you can set the “white balance” to make those same adjustments.

Capturing natural skin tones

The goal is to capture natural skin tones and avoid the color extremes: too cool and too warm. “Too cool” is when your image is distorted in a way that enhances the blues and greens, causing your patient to look pale or

almost frozen. “Too warm” will occur if the red and yellow tones of the picture are increased, causing the patient to look flushed.

On some cameras, you can combat this type of distortion by adjusting the white balance. When possible, keep this set to “auto” or “flash” for closer images. On some point-and-shoot cameras and all DSLR cameras, the white balance can be manually set.

Consistent settings

In any case, it's critical to set up the room with the same type light for each photograph and keep the setting consistent on the camera.

Close the blinds in each room during photography. Use your flash or hot lights as the primary light source. Each of the light sources—fluorescent, exam light, flash, and hot lights—are different colors of light. If you change the light you use between photographic sessions of the same patient, their skin will appear to be a different color in each session.

Clinical images can also be detrimentally influenced by background, clothing, jewelry, makeup, and hairstyles.

- Use a plain grey or dark-colored poster board or wall as a backdrop for all of your photos.
- For darker-skinned patients, blue or grey will provide enough contrast.
- Advise your patients to remove any accessory that may appear distracting or cause distortion in any pre- or post-treatment photos.
- Have your patients wear a collarless gown to maintain neutral and accurate skin tone in your images.

This will ensure a consistent look for accurate comparisons.

Consistency in color, like the angle and intensity of light, is very important. Tight control over the type of light coming into the lens will have an important positive impact on your photographs.

4 All light isn't created equal.

Proper lighting is important in any photograph, and it is especially important for close-up images in medical photography. Shadows can distort the subject of the photograph,

rendering the image useless for its intended purpose. Alternatively, an overly bright exposure might minimize wrinkles and other skin features that may need to be highlighted in the photograph.

The key to proper lighting is to provide enough light to illuminate the subject, but to diffuse the light or provide it from an indirect angle. This will remove the harsh shadows without overexposing and washing out all the shadows in the image.

The two specific factors to consider in lighting a photograph are angle and intensity, and there are multiple ways to manage their effects on a picture. Many of the methods are camera- and/or light-dependent; a general understanding of the factors involved can go a long way toward understanding the proper setup.

Angle

Light traveling straight from the camera and reflecting from a subject tends to flatten the features. Conversely, light coming from an extreme angle will drastically increase shadowing. Navigation of these extremes can be fairly simple—*provide ample light at moderate angles.*

Your best results will be obtained by using two light sources to illuminate the object from both sides. This will remove the harsh shadows and light “fall-off” often seen on one side of an image due to the light coming from the other side of the subject.

Whether you are using one or multiple light sources, you should diffuse the light or bounce it off the walls to illuminate the entire room and create a softer effect. Diffusion is accomplished using the on-flash diffuser, a third-party diffuser such as a Lumiquest flash diffuser, or a “soft box” to scatter the light, enabling it to reflect off the subject from multiple angles, resulting in a softer photograph.

Alternatively, bounce the light from your flashes off the ceiling or side walls to flood the room with light. For extreme close-ups, use a multi-element ring flash or a twin flash such as those made by Nikon or Canon, which can be found at most camera stores. These provide light that reflects at an angle into the lens, reducing shadows yet providing consistent lighting.

Notice that all of these solutions accomplish the goal of having light illuminate your patient from multiple angles, removing the hard shadows while still providing the necessary detail.

Intensity

Intensity, defined as the amount or degree of strength of light per unit area, is another critical element in successful photography. There are three factors that contribute to controlling the amount of light coming into your camera on any given picture, also known as the “exposure” of the image. They are:

- **Aperture:** Adjusting the size of the lens opening, or “aperture” effectively changes the diameter of the hole that the light comes through into the camera. The smaller the lens opening, the less light comes in.
- **Shutter speed:** Controlling the length of time that the light is exposed to the digital chip, or the “shutter speed,” changes the amount of light that can get in. Shortening the length of time that the camera is “open,” reduces the amount of light that can get in.
- **External light source:** Controlling the amount of light coming into the camera increases or decreases the intensity of the external light source.

Balancing black and white

The combination of the amount and brightness of light coming into the camera and the length of time the camera is open can change the image from an almost black exposure (not enough light), to a perfect exposure (the proper combination), to an almost white exposure (too much light).

While this may all sound complex, camera manufacturers have made it very simple to get the perfect exposure. The computing power in today's cameras is so fast that the camera can calculate the amount of light and automatically adjust the flash intensity, aperture and shutter speed while the picture is being taken.

This is accomplished by ensuring the camera is set to read the amount of light coming through the lens; almost all cameras will automatically adjust the exposure accordingly. To do this, set your camera on Auto or Program (sometimes shown as P on the camera dial).

Next, make sure that the room has consistent lighting each time you take pictures. Draw the blinds to minimize the differences in time of day. Even though the camera will adjust its own settings, it will do so within a tolerable range, which may produce slightly different exposures if the light used for the images is drastically different.

Finally, use external light sources, such as flash or continuous lights (known as “hot lights”).

With either one, you can diffuse the light as discussed above, which will help prevent your photograph from being overexposed or too harsh. Remember to check the image preview on the back of the camera. Your image should be clear and bright.

Lighting Strategies

The next step towards achieving consistent photographs is to understand how to set up the room to maximize the probability of a correct and consistent image.

The most common scenario is a practice that uses a point-and-shoot camera with a built-in flash and no external lighting source other than the exam room lights. If this is the case, you may find that your images look slightly flat. Purchasing a diffuser for your camera and making consistent the amount of ambient light in the room by drawing the shades can improve consistency in your photographs.

Previously, we recommended positioning the subject four feet from the camera. However, in this case, the built-in flash may not have enough power to run through the diffuser, appropriately light your subject, and bounce light back at that distance. Therefore, you'll need to test your distances by moving your camera incrementally closer to your subject, taking a picture, and looking at it in the view finder.

Once you find the maximum distance where your subject is brightly lit, use that as the subject-to-camera distance every time you take a photograph. The camera will then set the shutter speed (usually at 1/60 or 1/125 of a second), and adjust the aperture and flash intensity. These automatic adjustments on a consistent setup should result in consistent images every time.

Lighting strategy is an area of photography that lends itself to lengthy discussions of possible options, depending on the particular needs of a practice and the facilities and budget available. For an in-depth discussion of techniques and equipment, visit the Photography Consultation Room on the ImageStore for Healthcare web site at: www.ImageStore.md

Above all, in clinical photography, consistency is critical. Once you find a combination of elements that works—distance, angle, and intensity—repeat those elements for each and every photograph to eliminate the differences that can cause a series of photographs to be unusable.

5 Blinks and blanks.

Some patients find it difficult to keep from blinking when a camera flash goes off. Many of today's digital cameras use multiple preparatory flashes to overcome this problem. It may also help if you have the patient keep his or their eyes closed while you count to three, and then open them at the moment the picture is taken. Always check the image in the image LCD view on the back of the camera to make sure you captured your subject with their eyes open.

If you are photographing a patient's face, you should make sure that the face is expressionless in both the pre- and post-op photos. The slightest smile can change the shape of the face and the severity of lines and wrinkles. An obvious benefit of digital cameras is that images can be immediately checked for closed eyes and correct facial expressions mimicking those from a past picture.

6 Keep it simple.

More features and a higher-priced camera don't necessarily mean better pictures. Actually, the opposite can be true: extra features add complexity and can make it harder to take good pictures quickly. This is especially true in practices where nurses and/or office assistants, who are under heavy time pressures, take the bulk of the photos. When choosing a camera, look for the following basic features.

Resolution

Digital camera resolution is measured in megapixels—the more megapixels, the higher the resolution, and the clearer the photograph. Generally speaking, a 3 megapixel (MP) camera will provide more than adequate resolution for 8 x 10 prints, PowerPoint presentations, or most common applications. Many of today's cameras capture images at 5 megapixels or more. Anything over 3 megapixels is fine. Higher resolution images mean larger image files. Except in rare cases, the additional information provided in images over 5 megapixels isn't necessary for medical photography.

Zoom

An optical zoom of at least 4:1 will serve well for applications ranging from close-ups of lesions or other conditions, to full body pictures. Many digital cameras have “digital zooms;” however, these are not true zooms. They reduce the resolution of the image and are *not*

appropriate for dermatology applications. Make sure you purchase a camera with at least a 3:1 optical zoom and then turn off the digital zoom through your camera's menu system to avoid activating it by mistake.

Macro Focus

Macro focus is required to take sharply focused close-up images. Be aware that the macro function does not always work well with the existing flash, as many flash set-ups will not illuminate the entire area in extreme close up situations. However, twin-flashes, multiple flashes, or hot lights will provide more than enough light to take an excellent photograph. On a higher-end camera, a ring flash combined with a macro lens will provide the best possible image.

7 The name game.

Just as consistency is important in taking your photographs, it's also crucial to have a consistent naming convention. This will greatly simplify the filing and retrieving of desired images. A typical format might consist of the first few letters of the patient's last name, followed by an underscore, followed by a date. For example, "smith_2006031506" or "smi_20060315". Using a date in the image name enables you to quickly scan through all the photos of a patient and see progress over time.

Whatever naming convention you decide upon, post a guide explaining the system near the computer so everyone entering data will use the same format.

8 Get the 411.

Even the best photographs will have only limited usefulness if they are not accompanied by complete labeling of all their relevant attributes. Mark each image with the patient name, date, condition, procedure, and location on the body.

This comprehensive image "tagging," or labeling, helps ensure that every photograph can be fully utilized to support any task for which it is appropriate—in effect turning your images into a medical knowledge-base. The use of a good image management system that supports such comprehensive image labeling and retrieval is essential.

9 Dare to be digital.

Many practices attempt to manage their photographs in a set of folders on their computers or just print photographs and add them to the patient's paper records. In the long run, this approach is problematic, as it does not allow photos to be easily retrieved based on their specific characteristics.

For example, if you file images by patient, they are easy to retrieve as long as you are searching based on patient name or number. But if you are looking for images of specific body sites, conditions, or procedures, you'll have to remember which patient had the best result, or you'll literally need to browse through every patient until you find the desired image(s). This is expensive and time consuming.

With a powerful image management system, you can easily retrieve photos by searching on various criteria. You can find photos of a patient taken after a specific date, or all the photos for a specific diagnosis. This increases office efficiency and the utility of your images.

In addition, having the capability to access and retrieve images from multiple locations such as exam rooms, consultation rooms, your office, your nurse's station, and home increases efficiency and image usability. Although storing your images on a single computer may seem like a simple solution in the short term, over time, it may become very limiting. Consider investing in a service that manages your images in a secure, HIPAA-compliant manner. You can then access your images from any computer using the proper login and password.

10 Build a database.

Your knowledge database of images is an incredible asset to your practice. The images can be used to demonstrate treatment effectiveness and track progression or regression over time. They can be filed with insurance companies for quicker processing and payment, can be added to letters for referring physicians and are helpful in avoiding mistakes. They can be used for before and after reference images, for marketing brochures, treatment books, or on your website. In difficult cases, they can be shared with a colleague or specialist for an outside opinion.

In any of these scenarios, the pictures need to be filed and categorized with the appropriate information that will allow them to be retrieved easily. You should be able to file images by patient, cross reference them by diagnosis, procedure or location, and store them in multiple reference folders. Most importantly, now that you can find them, use them effectively: share them in a HIPAA-compliant manner to provide better care, submit them digitally to insurance companies to streamline your operation, and show before and after shots online or on-screen to ensure realistic patient expectations.

In conclusion

Digital photography is an essential tool in today's world of increasingly specialized medical care. By following a few basic rules, you can capture excellent pictures to support optimal patient care and meet essential business requirements. With the right approach, the right equipment, and the right system, you can improve patient care, grow your practice, minimize insurance hassles, and achieve the full potential that digital photography has to offer your practice.

Through the Lens (TTL) Software provides state-of-the-art image management and sharing solutions for medical professionals and healthcare institutions. Using these solutions, your staff members can easily store and retrieve images based on any and all relevant criteria. Designed for intuitive use and flexible customization, TTL Software's photo archiving tools enhance all aspects of medical practice including diagnosis, consultation, claims management, regulatory compliance, professional development, and education.

Watch for our upcoming article entitled "Patient Positioning for Effective Medical Photography."

For more information, go to
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