

Digital Thermography: Information and Instructions

What is a thermogram? A thermogram is an infrared thermal image obtained by camera that photographs heat coming from your skin. The heat pattern is measured and analyzed. The procedure is non-invasive: nothing enters or touches the body. There is no radiation or risk of injury. It is just the same as having your picture taken by a digital camera.



What is medical thermography? Infrared technology has been used since the 1970's and medical books listed thermography as one of the tools to detect breast cancer as early as 1975. Maurice Bales, a scientist at the University of California, Berkeley developed the basics, and then upgraded the equipment for the Thermal Image Processor (TIP). It was used to identify musculoskeletal problems, like stress fractures. Thermography is simply a procedure utilizing an electronic camera to obtain an image of the infrared radiation (heat) coming from the surface of the skin. The thermographic procedure is performed as an aid to the diagnosis of abnormal temperature patterns, which may or may not indicate the presence of a disease process or pathology.

What does medical thermography show? Thermography reveals heat patterns associated with four basic processes:

1. Inflammation - examples include infection, any type of "-itis," fibromyalgia, acute trauma or strain, etc.
2. Vascularity - examples include blood vessels that are near the surface such as varicose veins, as well as vascular tissue that may be associated with cancerous growth deeper in the tissue.
3. Neurologic Dysfunction - examples include a pinched nerve from a bulging disc, dural elongation, muscle spasm, etc.
4. Lymphatic Congestion – examples include blocked or engorged lymphatic channels and pathways such as in the groin, armpits, above the clavicle, neck, etc.

What to expect from the thermogram appointment: The thermogram is done in our office in carefully monitored environment. Prior to having the thermogram you will be asked to sit on a stool wearing only a loose cotton gown in order to allow your skin to cool to room temperature. Your hair needs to be pulled up away from your neck to allow complete exposure of your upper chest and neck. During this period of adjustment, you will be asked to complete a brief questionnaire. After about 15 minutes of letting your body temperature stabilize to the room temperature, a staff member will obtain multiple images of the front and back of your body from your feet to your head. The procedure is then complete. We expect your appointment should take about 30 minutes from start to finish. The images are saved, reviewed by Dr. Kaslow, and a report with images is generated within approximately 1 week. A follow-up appointment is usually scheduled soon after so you can review the report and suggestions.

We use a state-of-the-art ultra-sensitive infrared camera and computer software to detect, analyze, and produce high-resolution diagnostic images of these temperature and vascular changes. The same equipment Dr. Kaslow uses is so sophisticated that according to an article in Alternative Medicine Magazine (September 1999), thermography enables detection at the very beginning of angiogenesis, which enables detection two to three years earlier than other diagnostic devices.



How can I trust that thermography is valid? Over 30 years of clinical use and more than 800 peer-reviewed studies in the medical literature have established thermography as a safe and effective means to examine the human body. In this database, over 250,000 women have been included as study participants. The numbers of participants in many studies are very large ranging from 37,000 to 118,000 women. Some of these studies followed patients up to 12 years. Breast thermography has an average sensitivity and specificity of ~90%. Detection of dysfunction is even better with sequential thermograms or other imaging tests.

Extensive research and investigation performed at Johns Hopkins University Medical School have established normal values for the distribution of heat in each region of the body. Variation from these normal values are measured and correlated with suspected injuries or diseases in the same way a blood or urine laboratory study is interpreted. Since the pattern of surface heat reflects the interior structure, we can “see” your neurologic response through thermography.

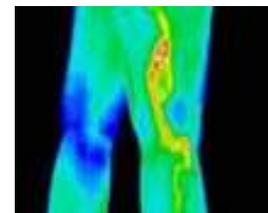
How much does thermography cost? The cost of capturing the thermographic images, the review and the written report with images for a full body thermogram (head to toe) and cold water hand immersion is \$390.00. Insurance usually does not cover thermography, but we will bill on your behalf with the understanding that we are not obliged to accept whatever they decide it is worth. For this reason, payment is required at the time of the exam.

What examinations is thermography useful for? At the time of this writing, medical research has shown thermography to be helpful in the diagnosis of:

- Peripheral Nervous System Disorders
- Metabolic Disorders

- Repetitive Strain Injuries
- Headaches, Neck and Back Problems
- TMJ Conditions
- Pain Syndromes such as fibromyalgia, myositis
- Arthritis
- Vascular Disorders (Raynaud's disease, etc.)
- Soft Tissue Injuries
- Dental and sinus infections
- Lymphatic blockages

In addition, there are patterns detectable by thermograms that suggest any condition for which there is an alteration of nervous control of blood flow or circulation such as soft tissue injuries, diabetes, peripheral vascular disease, osteoarthritis, dental and sinus infections, breast implant rupture, strokes, thyroid inflammation or underfunction, gall-bladder and liver inflammation, lymph congestion, and melanoma.



Having said what may show on a thermogram, clinical correlation is always required. Thermography should not be expected to replace physical exams or other diagnostic tests. In fact, rather than expecting a list of "diagnoses," the report should prompt three questions:

1. Which of the above processes (inflammation, vascularity, neurologic dysfunction, or lymphatic congestion) might explain the findings?
2. What if anything needs to be investigated further or confirmed?
3. What strategies might best address the physiology involved?

This assessment should lead to addressing one or more of the fundamental relevant actions:

1. Provide the body with the nutrients (vitamins, minerals, hormones, etc.) it needs to function optimally.
2. Avoid those foods, actions, environments that exacerbate the problem.
3. Detoxify or de-infect the organs, tissues, and matrix that are often hidden in dental, sinus, or gastrointestinal tissues.
4. Address structural issues like spinal alignment, leg length, pinched nerves, diaphragmatic restriction, etc.
5. Release unresolved emotional imprints that may be contributing to persistent "dis-ease."

How do I prepare for the procedure to get the most useful images?

5 DAYS PRIOR to your THERMOGRAM:

- Do not sun bathe or use a tanning salon.

24 HOURS PRIOR to your THERMOGRAM:

- Do not have physical therapy, EMS, TENS, CT, ultrasound treatment, acupuncture, chiropractic, physical stimulation, hot or cold pack use
- Do not have a massage.

THE DAY OF your THERMOGRAM:

- Do not use any lotions, creams, powders, makeup, deodorants or antiperspirants
- Avoid medications for pain.
- Avoid anything that may cause flushing or blood vessel constriction (i.e. alpha-blockers, niacin).

AT LEAST 6 HOURS PRIOR to your THERMOGRAM:

- Do not shave any area (underarms, face, legs, etc.)
- Do not exercise.
- Do not bathe or shower.

AT LEAST 2 HOURS PRIOR to your THERMOGRAM:

- Do not smoke, chew gum, eat or drink anything.
- Do not use any caffeinated foods or drinks. A small amount of room temperature water is acceptable.

Please check off each item above indicating that you have complied with the proper preparation for the examination and bring this form with you to your thermography appointment.

For menstruating women; SCHEDULE your THERMOGRAM to be done the WEEK BEFORE MENSES if possible. If you are nursing, try to nurse as at least an hour prior to your thermogram. IF YOU USE FEMALE HORMONES, it is best to have the thermogram done during the time of the month you use the hormones.

- Wear loose fitting clothes to the office. Any place that clothing touches you influences the thermograph image.
- Wear small undergarments such as bikini /thong style for women (if anything) on the day of the exam.
- Remove all jewelry (watches; bracelets; earrings and other piercings; necklaces; rings) before entering the office.
- Expect to disrobe completely to allow your skin temperature to cool to room temperature.

Digital Thermography of the Breasts: Infrared Mammography

The current 'early detection' approach used for breast cancer through breast self-examinations, professional assessments and x-ray mammogram is inadequate at best and potentially dangerous at worst. Despite the emphatic recommendations of physicians, medical societies, women's organizations, and the press, this approach to early detection is not the best we have to offer. To be blunt, you deserve better and there is evidence to prove this. Cancerous masses often have up to 10 years to grow before being seen on x-ray.

Unlike other parts of the body, thermography of the breast is a test of PHYSIOLOGY. It does not necessarily reveal anatomy or structure as it only reads the infra-red heat radiating from the surface of the body. Mammography, on the other hand, only shows ANATOMY. It looks at structure. When a tumor has grown to a size that is large enough and dense enough to block an x-ray beam, it produces an image that should be detected by a trained radiologist. By that time, the disease process has been present for many years.

Because pre-cancerous and cancerous masses are highly metabolic tissues, they need an abundant supply of nutrients to maintain their growth. As a result unhealthy tissue and the surrounding area is almost always hotter than normal breast tissue and results in an increase in regional surface temperatures of the breast detected by an infrared camera. By carefully examining changes in the temperature and blood vessel patterns, signs of possible breast cancer or pre-cancerous cell growth may be detected up to 10 years prior to being discovered using any other procedure. We now come to an important point. NEITHER thermography nor mammography alone or in combination diagnose breast cancer. They are both diagnostic tests that reveal different aspects of the disease process, which then guide further exploration. A biopsy must be performed to identify if the tissue is atypical or cancerous.

Thermograms also often help differentiate between cysts and tumors. For this reason thermography is useful in younger women, those for whom mammography would not be as effective. Thermography can also be used to monitor the results of treatment for suspicious lesions and cancer. Finally, breast thermograms show hormonal effects of excessive estrogen (hormone creams and pills).

Does a thermogram replace a mammogram? The thermographic procedure is not a stand-alone diagnostic tool, but an adjunct to be used with other clinical or diagnostic findings. The medical community investigated breast thermography quite extensively during the late 1970's and early 1980's. The FDA approved the procedure as an adjunctive tool in breast cancer screening, and many physicians, concerned about the radiation exposure of mammography, began to promote thermography as a replacement for mammography. This was an error. Thermography only provides a physiologic marker that some abnormality is present in the breast. Nothing more and nothing less. This is however, an extremely valuable and important finding, but it has historically been the interpretation of these findings that has been the problem, and is now the subject of the "responsible second look."

Unfortunately, thermography is often viewed as a competitor to mammography, a role for which it was never intended. Breast thermography is complimentary to mammography and an adjunctive tool in detecting breast cancer. The proper role for Thermal Imaging is to use it to assess risk of breast pathology. Using this perspective, there are a large number of studies published demonstrating the clinical utility and reliability of thermography.

How often should a breast thermogram be done? How often to have a thermogram has not been determined. Most experts have suggested every 6-12 months for comparison. Since thermograms have shown early disease development as much as 10 years before a mass has been detected on a mammogram, at about age 20-25 a baseline exam should be done. For high-risk women, sooner.

What if the thermogram shows a suspicious lesion? The appropriate follow-up diagnostic and clinical testing may include x-ray mammography, ultrasound or other imaging tests, laboratory tests, nutritional and lifestyle evaluation and training in breast self examination. Of course, you must address any contributing factors such inflammation, hormones, lymphatic congestion, etc.

What does it mean if I have a normal mammogram? It is very difficult to tell a woman that they have an abnormal thermogram and suggest the possibility of disease, and then have no other tools available to confirm or deny the test's correctness. This is not thermography's failure. Rather this is where the scientific and research community has failed thermal imaging. Consider the simple concept that thermography is detecting the fever of a pathologic breast process such as cancer, fibrocystic disease, an infection or a vascular disease. Once you know there is a problem, you can plan accordingly. Thus, the role of breast thermography is a highly accurate, highly sensitive thermometer; much like the one every physician uses daily to determine the presence of fever.

What do I do if there is an abnormality on thermography but not on mammography? Numerous studies demonstrate that patients initially considered "false positive" on thermography (positive thermograms and negative mammograms) were determined by long term follow-up to have developed breast cancer in exactly the location thermography had demonstrated abnormal findings 5-10 years earlier. Thermography's only error is that it is too right ~ too early. This is both exciting and frustrating for the clinician and the patient. A suspicious or abnormal thermogram gives the opportunity to intervene long before the cancer expands, invades or metastasizes. If there is no mass on mammogram, then the suspicion of cancer must be addressed in an aggressive proactive fashion. On the other hand, it is frustrating to uneducated clinicians and patients, and poses quite a dilemma for those with a "wait and see" attitude. Sequential thermograms enable the physician-patient team to determine if the lifestyle modifications and therapy are effective in changing the breast physiology towards preventing not only cancer but all breast disease.

In April 2012 we changed our procedure and approach to interpretation in order to provide a more holistic approach to the thermogram findings. For women, although this report includes a Breast CTA score, we are relying less on the quantitative temperature values and more on patterns and symmetry to provide greater insight into the health of your breasts and related tissues. For example, dental bone health, lymphatic congestion, vertebral nerve conductivity may directly influence breast health. As a result we no longer recommend limiting your images to the images to the breasts alone, but now include comments about your jaw and maxilla, neck (supraclavicular region), axilla (armpits), diaphragm, gall-bladder, spine, etc. which all greatly influence not only your breast tissues but may provide direction on effective management. We still include a cold water hand immersion challenge to enhance our insight into the physiology of the breast tissue.