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Thermography – Frequently Asked Questions

**All information below is taken from iMAT – Institute for the Advancement of Medical Thermology
www.iamtonline.org/therm.php*

What is Thermography?



Digital Infrared Thermal Imaging is a unique technology that takes a picture and creates a map of the infrared patterns of the body. It is different than other screening tools because it helps us to see function (physiology). MRI and X-ray detect anatomical changes so will miss such things as active inflammation or angiogenesis (increased blood supply as found in cancer). It was approved by the FDA for breast cancer screening in 1982. It can detect early danger signs in the body years before other tools. It has been shown to be effective in finding early signs of breast cancer up to 8 years before the mammogram.

What Can Thermography Be Used For?

There are 3 areas that Thermography is useful:

- Inflammatory Phenomena- This could include early detection of cardiovascular disease, arthritis, Fibromyalgia or trauma such as strains, sprains or chronic pain.
- Neovascular Phenomena - Cancer is fed by the bodies own blood supply. This development of early vascularity is detected well before anatomical changes occur that will be detected with other screening tools.
- Neurological Phenomena - Chronic regional pain syndrome, nerve irritation can cause referred pain in other areas. Circulatory deficits are easily seen in thermographic images.

A full body screening covers all regions of the body with no less than 28 images. A region of interest can be used for focalized screening such as breast screening, thyroid, etc.

Is It a Proven Technology?

Thermography has been comprehensively researched for over 30 years. While it is not a replacement for Mammography, it may have many valuable assets including: earlier detection of neovascular (blood supply) patterns, adjunct to inconclusive mammograms, improved detection for women with dense breasts or implants or a reasonable alternative for women



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who refuse mammogram. Below is a sample of the over 800 studies in the index-medicus. They represent some of the important findings and value of thermography.

Fast facts:

- In 1982, the FDA approved breast thermography as an adjunct diagnostic breast cancer screening procedure
- Of the extensive research conducted since the late 1950's, well over 300,000 women have been included as study participants
- The size of the studies are very large: 10k, 37k, 60k, 85k
- Some studies have followed participants up to 12 years
- Strict standardized interpretation protocols have been established for 15 years to remedy problems with early research.
- Breast thermography has an average sensitivity and specificity of 90%
- An abnormal thermogram is 10 times more significant as a future risk indicator for breast cancer than a first order family history
- A persistent abnormal thermogram carries with it a 22x higher risk of future breast cancer
- Extensive clinical trials have shown that breast thermography significantly augments the long term survival rates of its recipients by as much as 61%. When used as a multimodal approach (clinical exam +mammography+thermography), 95% of early stage cancers will be detected.

Why Have I Not Heard About This?

Like many alternative diagnostic tools or treatments, the facts are not always disclosed. Thermography was summarily dropped from breast screening in the 1980's after only 1 year of use. The reason was sited as being it detected too many false positives and therefore was not specific enough. This is ironic since the mammogram has a 65% false positive rate and recent studies have shown that it is a poor predictive tool. 90% of MD's know nothing of the technology and so are critical of that which they don't know. The other 10% seem to quote research from 22 years ago from a few small studies and ignore the plethora of positive research.

Is it accurate?

Yes, as a routine screening tool, it has been shown to be 97% effective at detecting benign vs. malignant breast abnormalities. Another study tracked 1537 women with abnormal thermograms for 12 years. They had normal mammograms and physical exams. Within 5 years, 40% of the women developed malignancies. The researchers commented ""an abnormal thermogram is the single most important marker of high risk for the future development of breast cancer" These results have been repeated over and over again for nearly 30 years.



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Is It Safe?

While a variety of studies have called into question the safety of cumulative exposures to radiation, this is not the case with Thermography. Thermography emits nothing, it only takes an image. Nothing touches you and it is quick and painless. This all makes Thermography great for frequent screening with no chance of danger.

Who Reads the Images?

The images are sent via a secured server to Physicians Insight Clinical Interpretation where a professional group of physicians who are trained in the protocols of reading Thermal images interpret the images. A very formal interpretation is made and sent to us where we will review the results and make suggestions or referrals if necessary. You are given a copy of the report and frequently we send copies of the reports to physicians for their records.

What If I get Abnormal Results? What Do I Do?

Thermography is not diagnostic but gives early risk factors. This is great news because an abnormal result from a thermogram often buys time so that natural interventions such as herbs, supplements and lifestyle changes can influence the outcome. At the least, the condition can be closely monitored safely until conventional interventions need to be applied. It is important to recognize that early detection is the key to a good outcome. We will make recommendations or referrals as necessary.

Some Selected Research:

Stark, A., Way, S. *The Screening of Well Women for the Early Detection of Breast Cancer Using Clinical Examination with Thermography and Mammography. Cancer 33: 1671-1679, 1974*

Researchers screened 4,621 asymptomatic women, 35% whom were under age 35 y.o. and detected 24 cancers (7.6 per 1000) with a sensitivity and specificity of 98.3% and 93.5% respectively

Y.R. Parisky, A. Sardi, R. Hamm, K. Hughes, L. Esserman, S. Rust, K. Callahan, *Efficacy of Computerized Infrared Imaging Analysis to Evaluate Mammographically Suspicious Lesions. AJR:180, January 2003*

Compared results of Infrared imaging prior to biopsy. The researchers determined that Thermography offers a safe, noninvasive procedure that would be valuable as an adjunct to mammography in determining whether a lesion is benign or malignant with a 99% predictive value.

Gros, C, Gautherie, M. *Breast Thermography and Cancer Risk Prediction. Cancer 45:51-56 1980* *From a patient base of 58,000 women screened with thermography, researchers followed 1,527 patients with initially healthy breasts and abnormal thermograms for 12 years. Of this group, 40% developed malignancies within 5 years. The study concluded that "an abnormal thermogram is the single most important marker of high risk for the future development of breast cancer"*

Spitalier, H., Giraud, D. et al. *Does Infrared Thermography Truly Have a Role in Present Day Breast Cancer Management? Biomedical Thermology pp.269-278, 1982*

Spitalier and associates screened 61,000 women using thermography over a 10 year period. The false negative and positive rate was found to be 11% (89% sensitivity and specificity). 91% of the nonpalpable cancers (T0 rating) were detected by thermography. Of all the patients with cancer, thermography alone was the first alarm in 60% of cases. The authors noted "in patients having no clinical or radiographic suspicion of malignancy, a persistent abnormal breast thermogram represents



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the highest known risk factor for the future development of breast cancer"

Jiang LJ, Ng FY et al A Perspective on Medical Infrared Imaging. J Med Technol 2005 Nov-Dec;29(6):257-67 Since the early days of thermography in the 1950s, image processing techniques, sensitivity of thermal sensors and spatial resolution have progressed greatly, holding out fresh promise for infrared (IR) imaging techniques. Applications in civil, industrial and healthcare fields are thus reaching a high level of technical performance. In many diseases there are variations in blood flow, and these in turn affect the skin temperature. IR imaging offers a useful and non-invasive approach to the diagnosis and treatment (as therapeutic aids) of many disorders, in particular in the areas of rheumatology, dermatology, orthopaedics and circulatory abnormalities. This paper reviews many usages (and hence the limitations) of thermography in biomedical fields