**Digital infrared thermal imaging in health care**

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Jump to: [navigation](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#mw-navigation), [search](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#p-search)

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Colors indicate increases or decreases in infrared radiation emitted from the body surface

**Digital Infrared Thermal Imaging** (**DITI**) is a diagnostic technique that is non-invasive and involves no exposure to radiation. During an exam, a DITI camera is used to capture images, called thermograms. These thermographic images are taken by trained thermographers who submit them to a thermologists (medical doctors trained in [thermology](http://en.wikipedia.org/wiki/Thermology)) who interpret the images for the patient to submit to their [health professional](http://en.wikipedia.org/wiki/Health_profession) for further evaluation.[[1]](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_note-1)

BreastThermography.com includes a disclaimer that properly places DITI in the hierarchy of diagnostic tools available for breast screening:

"Breast thermography offers women information that no other procedure can provide. However, breast thermography is not a replacement for or alternative to mammography or any other form of breast imaging. Breast thermography is meant to be used in addition to mammography and other tests or procedures. Breast thermography and mammography are complementary procedures, one test does not replace the other. All thermography reports are meant to identify thermal emissions that suggest potential risk markers only and do not in any way suggest diagnosis and/or treatment. Studies show that the earliest detection is realized when multiple tests are used together. This multimodal approach includes breast self-examinations, physical breast exams by a doctor, mammography, ultrasound, MRI, thermography, and other tests that may be ordered by your doctor."

A commentary piece, published in Minnesota Medicine entitled “Emerging Controversies in Breast Imaging: Is There a Place for Thermography?” is essentially pro-thermography at least in terms of investigating the technique further in order to address the questions raised regarding it’s efficacy.

Quoting from the text of this article:

“The biggest question concerns the efficacy of thermography to detect breast cancer. Despite various studies that suggest positive results for thermography, there has never been a major randomized controlled trial to determine baseline measurements of sensitivity and specificity. It is hard to imagine thermography being accepted by the conventional medical establishment without such data or evidence of cost-effectiveness.”

and:

“In lieu of any industry or professional standards for thermography, a variety of practices and protocols have emerged among practitioners and equipment manufacturers. As one practitioner described it, the industry is in its “Wild West” days.”

Another site that promotes thermography, <http://www.thermographyclinic.ca/research.html>, includes citations from, and links to the text of several relatively recent studies.

1) A study published in as "Infrared Imaging of the Breast: Initial Reappraisal Using High-Resolution Digital Technology in 100 Successive Cases of Stage I and II Breast Cancer" in The Breast Journal – July/August 1998 by J.R. Keyserlingk MD \*†, P.D. Ahlgren MD \*†, E. Yu PhD † ‡, and N. Belliveau, MD† \* Department of Oncology, St. Mary's Hospital, Montreal, Quebec; ‡ Department of Radiotherapy, London Cancer Center, London, Ontario; and † Ville Marie Breast and Oncology Center, Montreal, Quebec, Canada was presented at the American Society of Clinical Oncology Meeting, May 17-20, 1997, Denver, Colorado. These researchers concluded that “we currently limit the role of infrared imaging to that of a closely controlled compliment to clinical exam and high quailty mammography. Our initial data should not be extrapolated to either formal screening or noncontrolled diagnostic environments without appropriate evaluation, preferably in prospective controlled multicenter trials.”

2) "Infrared imaging offers a safe noninvasive procedure that would be valuable as an adjunct to mammography in determining whether a lesion is benign or malignant." Efficacy of Computerized Infrared Imaging Analysis to Evaluate Mammographically Suspicious Lesions - Y. R. Parisky, A. Sardi, R. Hamm, K. Hughes, L. Esserman, S. Rust, K. Callahan American Journal of Roentgenology 2003

3) "DITI is a valuable adjunct to mammography and ultrasound, especially in women with dense breast parenchyma." Effectiveness of a noninvasive digital infrared thermal imaging system in the detection of breast cancer Nimmi Arora, M.D., Diana Martins, B.S., Danielle Ruggerio, B.S., Eleni Tousimis, M.D., Alexander J. Swistel, M.D., Michael P. Osborne, M.D., Rache M. Simmons, M.D. 2008 - The American Society of Breast Surgeons

These studies support the position of the US FDA, that SDITI and similar thermographic techniques may be helpful as an adjunct to mammography and other diagnostic tools.

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| **Contents*** [1 History](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#History)
* [2 Common clinical uses](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#Common_clinical_uses)
* [3 Types of screening](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#Types_of_screening)
* [4 References](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#References)
* [5 External links](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#External_links)
 |

**History**

"In 1986, a joint meeting was held in Austin, Texas to discuss the lawsuit against Medicare in an attempt to stop them from removing thermography from the official Medicare fee guidelines. Asked to testify before the State organization were Mr. Victor Yannacome, a trial attorney from New York City who is famous for his defeat of the U.S. Military and Dow Chemical for the use of Agent Orange, and Dr William Cockburn, a clinical thermographer from Los Angeles, CA."[[2]](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_note-2)

Mr. Yannacome and Dr. Cockburn had a meeting afterwards whereas the future of medical thermal imaging was discussed. It was during this meeting that Mr. Yannacome came to the conclusion the word "thermography" was now associated with fraud and would need to be changed in order for it to survive. It was at this meeting that Mr. Yannacome came up with the new name DITI, or Digital Infrared Thermal Imaging.

While some groups try to claim the term DITI as their own construct, the term DITI was coined by a nationally renowned lawyer in 1986 in Austin, TX.[[3]](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_note-3)

**Common clinical uses**

* Early detection of breast cancer[[4]](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_note-4)
* Monitoring changes in overall health
* Monitoring healing processes
* Disease and Virus Monitoring
* Fever Screening (i.e. H1N1, SARS)

**Types of screening**

* [Breast Screening](http://en.wikipedia.org/wiki/Mammography) to detect [breast cancer](http://en.wikipedia.org/wiki/Breast_cancer) and other disorders at their earliest stages
* Full Body Screening to detect areas of inflammation and origins of unexplained pain
* [Region of Interest](http://en.wikipedia.org/wiki/Region_of_interest) Screening to identify and monitor localized conditions such as thyroid conditions, TMJ, [carpal tunnel syndrome](http://en.wikipedia.org/wiki/Carpal_tunnel_syndrome), etc.
* Mass Screening, in areas such as airports, to monitor the potential spread of viruses such as [H1N1](http://en.wikipedia.org/wiki/H1N1) (Swine Flu) by identifying fever symptoms in specific individuals[[5]](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_note-5)

**References**

* 1. [**^**](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_ref-1) ["Overview of Digital Infrared Thermal Imaging"](http://www.meditherm.com/thermography_page1.htm). Meditherm. Retrieved 2008-01-15.
	2. [**^**](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_ref-2) ["The Origin of the Term – D.I.T.I."](http://www.medicalir.com/medical-infrared-imaging-resources/medical-infrared-imaging-general-information/82-the-origin-of-the-term--diti). MedicalIR. Retrieved 2009-11-12.
	3. [**^**](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_ref-3) ["The Origin of the Term – D.I.T.I."](http://www.medicalir.com/medical-infrared-imaging-resources/medical-infrared-imaging-general-information/82-the-origin-of-the-term--diti). MedicalIR. Retrieved 2009-11-12.
	4. [**^**](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_ref-4) Witt, Brenda. ["Digital Infrared Thermal Imaging In Medical Therapy"](http://www.hereinmaine.com/breast-cancer/58735.php). Here In Maine. Retrieved 2008-01-15.
	5. [**^**](http://en.wikipedia.org/wiki/Digital_infrared_thermal_imaging_in_health_care#cite_ref-5) "[Infrared Technology Aids in Fight Against Swine Flu](http://www.infrared.com/applications/infrared-swine-flu.php)". Infrared, Inc. Retrieved 2009-09-22.

**External links**

DITI:

* [Picture Your Health](http://www.pictureyourhealth.com/)
* [Meditherm](http://www.meditherm.com/)
* [Med-Hot Thermal Imaging](http://www.med-hot.com/)
* [Energetic Health Systems](http://www.infraredscreening.com/)
* [Digital Infrared Thermal Imaging In Medical Therapy](http://www.articlecity.com/articles/women/article_807.shtml) by Brenda Witt
* Pain Free Breast Imaging (<http://painfreebreastimaging.com/what.html>)
* Medical Infrared Imaging (<http://www.MedicalIR.com>)
* FDA Cleared DITI Cameras (<http://www.infraredcamerasinc.com/Thermal-Cameras/FDA-Medical-Thermal-Cameras/FDA_Cleared_Medical_Thermal_Imagers.html>)
* [Core Health Thermography](http://corehealththermography.com/)

[Categories](http://en.wikipedia.org/wiki/Help%3ACategories):

* [Infrared imaging](http://en.wikipedia.org/wiki/Category%3AInfrared_imaging)
* [Medical imaging](http://en.wikipedia.org/wiki/Category%3AMedical_imaging)